RouterCentric - Fish-shaped platter

WOODWORKING Plans & Projects

The UK's essential workshop project & technical manual
Issue 78 March 2013

DIY SOLUTIONS
Fitted storage

PROJECTS:
- Carved rose
- Blanket chest
- Reading stand
- Geometric puzzle
- Turned bird feeder

Handbuilt
Chisels & gouges

Machine workshop
Portable thicknesser

FEATURES:
Wood engraving
Chainsaw carving
Tools of Yesteryear

ON TEST:
Hitachi nailers
Lenox holesaws
Skil multi scraper
Elmer's tinted woodfillers

Real Bosch! How To Guide

Ever wondered how the professionals do it? Not sure and need some advice on doing a new task?

Not only is there the guide below, but you can also have the workshop wizard Alan Holtham run through this task in the online "How To" video by scanning the QR code with your smart phone or alternatively visit our YouTube channel at the bottom of the page.

QR Code: Scan me

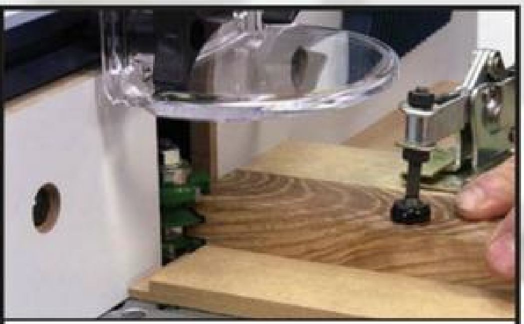
Making a Raised panel door

In this issue Bosch and Alan help you out with a guide to cutting and assembling a raised panel door using a router and worktop jig.

Main tools for the job

You will need a powerful ½" router, a router table and a set of panel door cutters

The timber must be thicknessed precisely



Use a homemade jig to scribe the rail ends

Adjust cutter height to machine profile

Make trial cuts and adjust height until joint is flush

Machine the profile on rail and stile edges

Form the panel mould with progressively deeper cuts

Assemble the door, sand the joints and radius the outer edges

Finished panel

To watch more "How To" videos visit
www.youtube.com/user/BoschProfessional

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Welcome from the Editor

Hello everyone, this year seems to be racing by already as here we are in spring with nature doing what nature does. Traditionally the Easter Bank Holiday in April is when the most DIY accidents occur during the year. This isn't surprising as four days in a row of holiday mean you run out of excuses for putting off important home projects. We hope all readers stay safe of course but this major burst of activity following winter's semi hibernation can catch us out, especially if last year's skills and tools are just a little rusty. The key thing with any major project is pre-planning – my excuse for delay! Work out the parameters of the job, i.e. what is it you are really trying to achieve? Why? And is there a better solution? Then do the drawings with dimensions and cutting and materials lists. Lastly, have you got the right tools? If not, maybe a new investment may be required before you start.

A key aspect that I try to stick to, is never unwrap anything before need it and keep the BILL! That way you can at least return the goods if they aren't to special order and get your money. DIY has cost me a fortune over the years and I try to keep a firm grip on costs. However as we all know, something like a simple plumbing job ends up with a collection of the wrong parts already wetted and smeared in pipe sealant followed by another visit to the hardware store for the correct parts! Thankfully wood scores better if you have the means to resize it or reuse it and that is indeed the joy of working with wood – its flexibility as a working material. It's taken years to do it but my workshop is now nearly empty of board and timber that has been recycled through project after project until it has become only fit for burning in the stove. So, in this issue James Hatter shows us his simple but effective fitted storage, something we all need in our homes with so many clothes and possessions. Maybe now is the time to look around and see how you can tidy up the house? The message has to be this: get planning, get going and good luck!

PHOTOGRAPH BY JAMES HATTER

James Hatter's fitted storage article may inspire your Easter break activities...

Anthony Bailey, Editor
Email: anthonyb@thegmcgroup.com

SAFETY MATTERS

Woodworking is an inherently dangerous pursuit. Readers should not attempt the procedures described herein without seeking training and information on the safe use of tools and machines, and all readers should observe current safety legislation

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To find more great projects, tests and techniques like these, visit our fantastic website at:
www.woodworkersinstitute.com

Noticeboard

All the latest news from the world of woodworking, plus tips, letters and images from the Woodworkers Institute forum

TOOLSHOW 2013

Toolshow 2013 is building on the massive success of the 2012 event and aims to be the largest tool show in the country. Toolshow 2013 will be over twice the size of the 2012 event and takes place at the award-wining American Express Community Stadium, Brighton on Saturday 20 and Sunday 21 July this year. PR Industrial has years of experience in the industry and aim to bring one of the largest gatherings of suppliers to one venue in the South East of England for the ultimate tool show.

The event this year features free parking, free entry and free demonstrations as well as a range of big brands in the woodworking and tool industry offering you great details and big savings. Exhibitors at the show include Trend, Festool, Veritas, IRWIN, Mirka, Stanley, Metabo, Makita and Bosch, as well as a host of others. See the website for the full list.

To receive regular updates on the show you can follow Toolshow2013 on Twitter – toolshow2013 – and on Facebook, search for prindustrialtoolshow2013.

PHOTOGRAPH COURTESY OF PR INDUSTRIAL

DETAILS

When: 20–21 July, 2013
Where: The American Express Community Stadium, Village Way, Brighton, East Sussex, BN1 9BL
Contact: PR Industrial
Web: www.toolshow2013.co.uk

From the forum:

Medieval chair

Made in mahogany *(Kbaya ivorensis)* over the Christmas period for my Grandson William who is two years old. It's a version of a 'Savonarola' design chair from the 16th century, scaled down from a full-sized drawing to fit William. It's my first post in this section for me as most, if not all, of my work is turned – I am not a furniture maker. Comments are most welcome.

John B

Lucky, lucky lad!

Ron

"I am not a furniture maker" – I beg to differ… that looks like a nice piece of furniture to me!

Ray

Now that looks good, something to be proud of. Regards,

Ted

Nice one. I cannot let my Grandson see this or I will be a very busy Grandad!

Decoy48

PHOTOGRAPHS BY MAKER

Woodworks at Daventry

This show, now in its fourth year, is promising to be their biggest and best show yet. There will be some superb professional demonstrators, the usual 'hands-on' surgery, traders big and small to cater for your every need, even more turning and carving clubs, and to make sure that you don't go hungry, the Ladies of the Daventry Townswomen's Guild will be in charge of the food. Demonstrators include, among others: Mick Hanbury, Lisa Raby and Gary Rance. The show will again be free to visitors but attendees can buy raffle tickets, to help the club produce this show in years to come. There's free parking too!

PHOTOGRAPH BY COLIN SMITH

DETAILS

When: 11–12 May, 2013

Where: Daventry Leisure Centre, Lodge Road, Daventry, NN11 4FP

Contact: Tudor Rose Woodturners

Web: www.tudor-rose-turners.co.uk

LIE-NIELSEN'S DENEB PUCHALSKI TOUR

Deneb Puchalski, hand tool and sharpening guru from Lie-Nielsen, will be visiting Ireland and the UK this March. He will be demonstrating close to Dublin followed by a whistle-stop tour of the UK.

Deneb, who tours North America demonstrating Lie-Nielsen tools, is the recognised authority on how to get the very best from these excellent tools. He can help with advice on sharpening, plane tuning and many more techniques. His passion and enthusiasm for the tools he works with are clear to all who have seen his demonstrations.

PHOTOGRAPH COURTESY OF AXMINSTER TOOL CENTRE

2013 Tour Dates

7 March: The Carpentry Store, Naas nr Dublin. www.thecarpentrystore.com open evening event. 4pm–7pm

8–9 March: Axminster Tool Centre, High Wycombe. www.axminster.co.uk open day event. 10am–4pm on both days

12 March: Classic Hand Tools, Witnesham, Ipswich. www.classichandtools.com open afternoon event. 2pm–5pm

13 March: G&S Timber, Penrith. www.toolsandtimber.co.uk open afternoon event. 1pm–4.30pm

14 March: Brodies Timber – formerly Jean Burhouse – Dunkeld, nr Perth. www.brodiestimber.co.uk open afternoon event. 2pm-4pm

15–16 March: Axminster Tool Centre, Warrington www.axminster.co.uk open day event. Friday 12–4.30pm, Saturday 10–4pm

Social media & competitions

If you're not already familiar with our Facebook and Twitter pages, then do take the time to have a look and follow us. On Facebook, search for 'Woodworkers Institute' and on Twitter, we're @woodworkers. You can keep up-to-date with everything that's happening on the website, in terms of new article uploads, the latest press releases, weblogs, as well as a host of special features.

You can use our Facebook and Twitter pages to meet other woodworkers, interact, socialise and get news of regular competitions.

RECORD POWER SPRING SHOWS

PHOTOGRAPH COURTESY OF RECORD POWER

Representatives from Record Power will be on hand to answer your questions and demonstrate products from their extensive range, with exclusive deals at the following:

1–2 March: Tewkesbury Saw, Gloucestershire
6 March: WL West & Sons Ltd, West Sussex
11–12 March: DJ Evans, Suffolk
15–16 March: RS Paskin, Worcestershire
16 March: Snainton Woodworking Supplies, N. Yorkshire
22–23 March: Norfolk Saw Services
5–6 April: Yandle & Sons Ltd, Somerset
26 April: Record Power, Derbyshire

For full details, times and locations, visit:
www.recordpower.co.uk/shows

YANDLES SPRING SHOW

Yandles Spring Show is always a highlight on the woodworking events calendar.

Thousands of visitors come from across the country to enjoy the informal and friendly atmosphere created within the surroundings of this historic timber yard.

The usual working site is transformed with marquees hosting a vast array of leading craftspeople. Live demonstrations will keep you entertained with new techniques to learn, useful advice on tools and handy tips. The sawmill itself is converted for use by international manufacturers, traders and publishers displaying the hottest new product lines.

PHOTOGRAPH COURTESY OF YANDLES

When: 5–6 April, 2013
Where: Yandle & Son Ltd, Hurst Works, Hurst, Martock, Somerset, TA12 6JU
Contact: Yandles
Tel: 01935 822 207
Web: www.yandles.co.uk

South East Woodworking & Power Tool Show

The next South East Woodworking & Power Tool show takes place in March at the Kent County Showground at Detling, near Maidstone. The Kent Showground is almost certainly the most accessible exhibition venue in the South East, feeding as it does directly off the M2 and M20, thereby linking the whole of the South East motorway network – getting to the show couldn't be easier!

This year's show features demonstrations by Mick Hanbury, Dave Reeks, Jennie Starbuck, wood sculptor Bill Prickett and finishing demonstrations from Mark Raby. Nelton Exhibitions are now also delighted to announce that woodturner Tony Wilson will be demonstrating at the show. An impressive list of demonstrators plus a host of your favourite trade brands promises to make this a great day out! There's free parking and tickets are just £6 in advance.

PHOTOGRAPH COURTESY OF NELTON

DETAILS

When: 8–9 March, 2013
Where: Kent County Show Ground, Detling Hill, Detling, Maidstone, ME14 3JF
Tickets: £6 in advance **Contact:** Nelton Exhibitions
Tel: 01474 536 535 **Web:** www.nelton.co.uk

Send in your letters, tips, advice, digital photos and questions relating to woodworking to: WPP Readers' Forums, 86 High St, Lewes, East Sussex. BN7 1XN Alternatively, email simonf@thegmcgroup.com

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RouterCentric

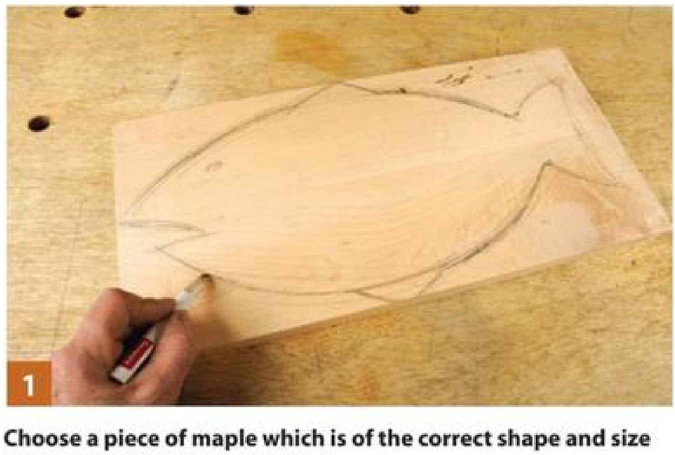
Fish-shaped platter

When **The Editor** came up with his next project it smelt a bit fishy to us. We think he had better explain himself or risk getting into hot water...

This idea is really for anyone who loves 'fruits de mer' – anything edible from the sea or stream; it's probably not sensible with a chicken wing sitting on it! I chose maple (*Acer campestre*) as a stable, safe timber with a dense grain and easy to clean after use. Two pieces were glued together with waterproof glue and thicknessed. After that it was down to a bit of artistic licence.

1 The board needed to be large to accommodate its tasty, well-cooked occupant. It had to be a reasonably convincing looking fish shape too. The dark mark seen in the top right is in the grain and will get cut away in a while.

2 I usually allow plenty of relief slots, especially with a tiny 6mm skiptooth bandsaw blade, so it doesn't get jammed anywhere during the cutting. It is particularly important to have relieving cuts in harder to reach places.



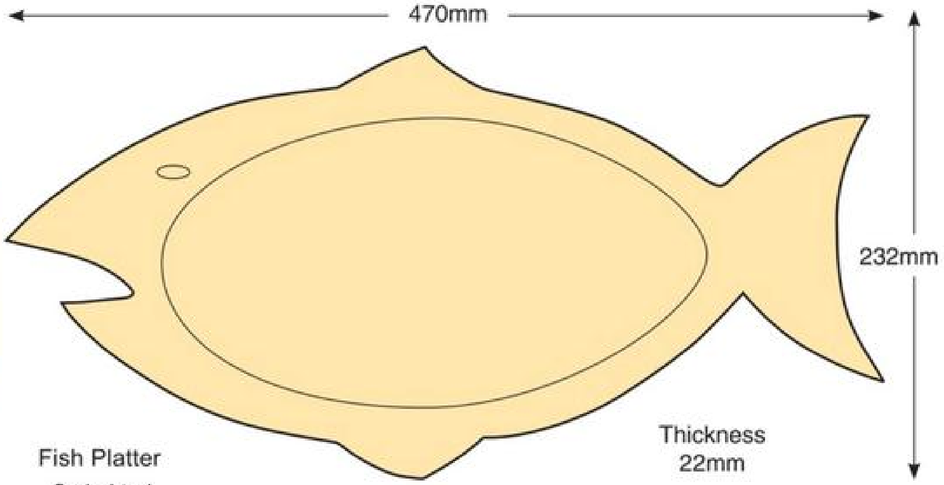
1

Choose a piece of maple which is of the correct shape and size to make the fish shaped platter

2

When bandsawing, allow plenty of relief slots so the blade doesn't get jammed during cutting

Allow the bandsaw blade to follow your line and not deviate. Also, do not force the wood



When working on tight inner curves, remove the bulk and use a sideways 'nibbling' action to tease away the remaining wood

For cuts that can't be completed due to throat restriction, mark on the reverse of the workpiece and complete from that side

3 Don't force the wood, and 'learn' the angle of 'lead' the blade has, so it will follow your line and not deviate unexpectedly. Only attempt to do the cut that is possible with throat width limitation.

4 Tight inner curves like this cannot be negotiated, instead remove the bulk and use a sideways 'nibbling' action to tease away the remaining wood. Keep on working gently sideways eventually working along the marked line.

5 Any cuts you cannot complete because of the throat restriction can be marked on the reverse of the workpiece and completed from that side. If done with care, the shaping should match up quite nicely.

6 Mr Fishy is looking quite okay, now for the dish shape that will hold our supper! This is marked freehand again, missing the eye and front of the head.

Next, mark the dish shape taking care to avoid the eye and the front of the head

7 To shape the dish I used a Wealden groundwork cutter with curved corners and a small Trend single blade corebox cutter to do the eye. The router was fitted with extraction and fence rods to which wooden skis from an earlier project were fitted.

8 Hold the router firmly either by the skis or the knobs, or a combination of both. Make shallow passes starting near the outside of the dish shape, moving clockwise in an arc.

To shape the dish use a Wealden groundwork cutter with curved corners and a small Trend single blade corebox cutter for the eye

Holding the router firmly, make shallow passes starting near the outside of the dish shape

Remove the centre of the dish moving the router anti-clockwise into the cut direction

The area of 'land' left in the middle will be removed later. Keep the skis resting on the rim of the fish at all times

Lift the router off and with the power off push down hard and lock the plunge, then lower the router on the job and do a cleaning up pass

As you can see, I forgot there was a chunk missing in the platter, but this can be easily fixed

I used the groundwork cutter in plunge mode to create a 'tartare sauce recess'

Remove any burn marks and ensure all food recesses and the eye have curved bottom edges

9 Now remove the centre but as the cut is on the inside edge you need to move the router anti-clockwise into the cut direction. Do not go backwards or the router may run away.

10 Burning is inevitable at this stage and extraction is essential to remove the chippings. Note an area of 'land' left in the middle which will get removed. Keep the skis resting on the rim of the fish at all times. Go down with each pass by no more than 2mm until you reach an acceptable final depth.

11 For the final pass, lift the router off and with the power off push down hard and lock the plunge; the slightly sloppy plunge mechanism should mean the extra push will increase the depth of cut by a tiny amount. Now lower the router on the job and do a cleaning up pass.

12 Now to reveal my mistake. I had forgotten there was a chunk missing which the routing had revealed, but not to panic as this can be easily solved.

13 So using the groundwork cutter in plunge mode, I created a 'tartare sauce recess' – yes, I meant to do that all along, didn't I? It just needs a careful run around at full depth to clean the hole up.

14 Any slight burns can now be sanded out. Curved bottom edges are needed for all food recesses and the eye as well, so the platter can be cleaned properly after use.

15 Now the small diameter corebox cutter is once again used for a shallow plunge to create the eye recess for the fish. It needs to be moved slightly to make an elongated shape.

16 A delta sander and medium abrasive makes fairly quick work of sanding this awkward shape. Unfortunately, as you can see from the photo below it deformed one point of the delta pad as it got overheated.

Use the small diameter corebox cutter for a shallow plunge to create the eye recess

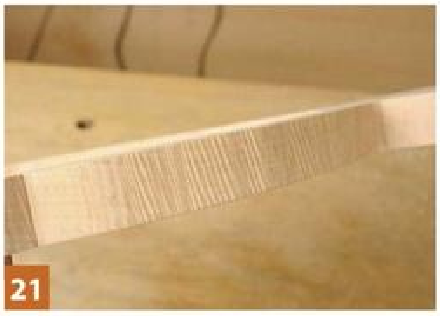
Use a delta sander and medium abrasive to sand the edges of the recess

Again, use the delta sander for sanding the dished base including the radiused corners

It doesn't matter if you get a smooth but uneven edge as you want the platter to have a handmade effect

Use a standard orbital sander to smooth the rim and back of the platter

Give the platter a good hand sand to remove any final traces of burning



The bandsaw edges can be left as they both look and feel good to the touch

17 The delta sander is perfect for sanding the dished base including the radiused corners. Change from medium to fine abrasive for a soft even finish to the wood.

18 You can even sand on edge to get a smooth but uneven edge because after all, this platter is meant to be handmade and not absolutely perfect, in other words unique.

19 A standard orbital sander is used to smooth the rim and the back of the platter. It now begins to look almost finished.

20 A good hand sanding completes the work and removes any final traces of burning caused by routing.

21 I wanted to leave the bandsawn edges because they look and feel good, not rough as you might expect.

22 However, the edges of the platter need to be 'broken' with abrasive including the pointed mouth and tail fin so it is safe as well as pleasant to the touch.

23 A last important touch is the addition of a food safe finish. In fact any food oil would be suitable as it is quite safe, so olive oil or cooking oil would do. Oil will help protect and seal the wood but it should be re-oiled at frequent intervals. Now all that's left to do is grill that delicious trout that's been waiting in the fridge! ■

'Break' the edges with abrasive so the platter is safe and pleasant to the touch

Finally, coat the platter with a wood safe finish or any food oil – the choice is yours

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PHOTOGRAPHS BY WALTER HALL, UNLESS OTHERWISE STATED

Portable thicknessers

Walter Hall gets to grips with another essential bit of workshop kit

Once timber has been selected for a project, the next most important task is to get it to the correct thickness for the job in hand. Of course it is possible to buy material that has already been planed flat and square, but as anyone who has bought timber will know, planed-all-round softwood is much more expensive than sawn timber, hardwood is rarely available planed and the cost of having it planed to size at the sawmill is prohibitive. If you plan to work regularly with wood then planing and thicknessing your own timber is a much more cost effective option and a portable thicknesser will pay for itself in a very short time. Preparing your own timber also has the added advantage that you are not restricted to the stock sizes that are commercially available.

Those with larger workshops and budgets may prefer a fixed planer thicknesser machine but for those where space is at a premium or who regularly work on site, the portable thicknesser will prove invaluable. With the sub tables folded away the machine is compact and can easily be transported by one person or stored away when not in use. Designed to reduce sawn material that is already reasonably flat to thickness, portable thicknessers can also be used to correct minor cupping, bowing and twisting of the wood.

How they work

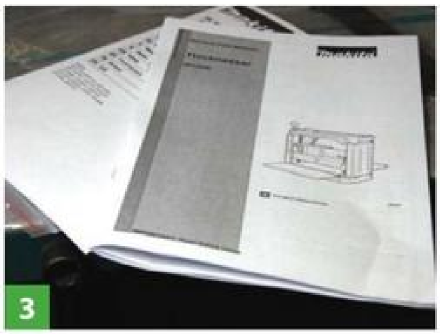
The core of the machine is a revolving drum known as the cutterblock fitted with two sets of removable cutting blades. The drum is chain-driven by an electric motor which also drives infeed and outfeed rollers that draw the timber through the machine. This assembly is mounted in a main frame that is raised or lowered within an outer frame by means of a crank handle to increase or reduce the distance between the cutters and the base of the machine, thus determining the depth of cut and finished dimensions of the timber. Sub tables are fitted to the front and rear of the frame to support the timber as it is fed through the machine.

When blade changing the power must be disconnected

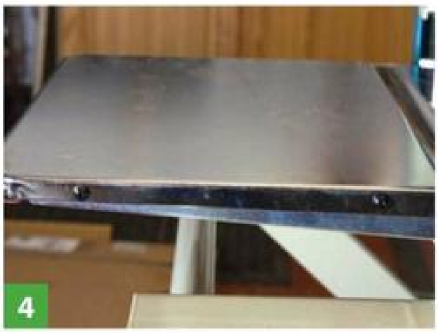
1 Thicknessers are fitted with removable blades which may either be of the re-sharpenable type or disposable. Disposable types may have a cutting edge on both sides so that they can be turned when one side becomes dull. The blades are mounted to the cutterblock by means of a set plate which enables adjustment.

WorldMags

2 This indicator plate can be turned to zero, there's a front scale and pointer too

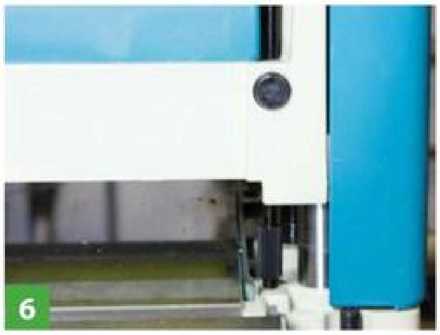


3 Pay attention to the cut limits defined in the manual to avoid overloading



4 Experiment with setting the infeed and outfeed table heights

5 The machine top is normally intended to take boards being passed back ready for the next cut pass. Some tops have rollers



6 A depth stop is useful for refinding an exact finish thickness, but retract it when not required

7 Extraction is pretty essential unless you don't mind your workshop being sprayed with chippings!

2 The finished thickness of the timber is measured against a graduated indicator plate and is set by turning the crank handle to lower the main frame.

3 Maximum depth of cut varies with the width of the timber being cut. This will be specified in the manual that is supplied with your machine. When more material needs to be removed this should be done in a series of passes.

4 The timber is supported on the sub-tables which may be adjustable to prevent 'snipe' – i.e. a step at one or both ends of the board. This can be removed by adjusting the height angle of the infeed and outfeed tables slightly. A very bowed board may not be correctable, so leave it overlength so you can trim off the sniped ends.

5 The top of the machine is normally designed to rest boards when moving them back again for the next pass. This can speed up working considerably, especially if you have an assistant to handle the outfeed.

6 A stop may be fitted to ensure regularity when planing numerous pieces down to the same finished dimension.

8 The toolkit will be needed eventually when blade blunting or scoring occurs

7 Planing produces very large amounts of waste. Adequate extraction is vital, not only for health and safety reasons, but also because the thicknesser will shower chippings around the workshop and may also cause 'printing', where the uncollected chippings dent the board as the rollers run over them. The supplied extraction hood should always be fitted and connected to a suitable extractor.

8 A toolkit is supplied and is often stowed on the machine. It is a good idea to buy a set of spare blades and keep the instructions for changing them. If you sustain premature minor damage to a blade you may be able to change over just one blade and save the other for the next change unless a lot of wear has taken place, in which case both blades must be replaced as blades of different dimensions or weight can cause vibration or even damage your machine.

9 It won't restart itself after the power cuts out, but still unplug it for maintenance

10 You can carry a 'portable' thicknesser but take care as they are heavy. A trolley is the safer option

9 A no volt release – NVR – switch is fitted to prevent accidental starting of the machine after the power has been disconnected.

10 Handles are built in to the casing to enable easy transportation.

How to work safely and get the best from your thicknesser

Leave a good exit route and support the board by hand or using a roller stand

Noise is loud and persistent and eye protection is essential

Never insert fingers under the infeed or outfeed sides of the machine

A stand or surface supports the thicknesser at a safe height

Don't rely on the machine's scales; use Vernier callipers

11 Always work in a tidy environment with sufficient room around the machine to safely feed the timber through.

12 Wear suitable personal protective equipment. Eye protection is a basic minimum, but thicknessers are also incessantly noisy and produce large amounts of waste, so hearing and respiratory protection is also recommended.

13 Switch the machine off when not in use and keep your hands well clear of the infeed at all times. Never sight through the cutter opening in case of timber or chippings being thrown back at you.

14 Set the machine up on a stable surface at a good working height for passing timber through. A dedicated stand designed for the purpose is best. A stand that is too high or narrow may be unstable.

15 Set up the machine by doing test cuts to ascertain the correct position for the pointer against the height scale. Use Vernier callipers to check accuracy.

Check it is possible to feed timber through the intended setting

16 Set the desired depth of cut by inserting the timber and lowering the cutter head until the depth gauge indicates the desired depth of cut. Now raise the cutter head, remove the timber, reset the depth previously indicated and feed the board through.

17 When planing a sawn board make sure the first passes are done with the natural 'cup' shape facing upwards so both edges are resting on the bed underneath.

18 Once the upper face is reasonably flat all over you can then turn it over to machine the underneath face.

PHOTOGRAPH BY JOHN BULLAR

Boards can bow very easily; in this example the board will be turned over to thickness so it rests on the outer edges

Get one face largely flat to give a reliable running face to work from when turned

The age old rule is not to machine against the grain as it will tear out

Ensure your tablesaw blade is truly perpendicular before squaring edges

Narrow boards can have deeper passes but wide boards need more effort

19 Respect grain direction; start with high grain at the front and running down towards the rear so the blades won't tear the grain out. The exception always has to be the start of thicknessing a board if it is thicker at one end, in which case you will need to feed the board fat end first so it doesn't jam in the machine, then reverse it if necessary once the board has been levelled.

20 So long as sawn boards are fairly flat throughout you can often miss out using an overhand planer. Edges can then be squared on a tablesaw with a fine blade. If the boards are not too wide they can then be fed on edge through the thicknesser.

21 Do not take heavy passes on wide boards as it will bring the machine to a halt; shut it off immediately if it does stop running. The thermal overload may cut out and will need resetting after a few minutes before carrying on.

22 Finish thicknessing a board by repeatedly turning it over between passes and use fine cuts so both faces are smoothly finished ready for use.

23 Often the minimum height setting is not narrow enough to make thin components. In this case make up an MDF sub table which is a long board with a batten at the front edge so it is held by the infeed table and cannot slide through when machining. Now you can feed thin components through and make them even thinner still, just take light passes to avoid the wood breaking up.

24 A bowed or twisted board can be screwed to a flat reference board, the bowed or twisted area wedged and then passed through the machine until the top surface is flat.

Careful working should result in a very smooth finish without chatter marks

It can then be unscrewed, turned over and the planed face used as the reference face for thicknessing. Take care that screws do not protrude far enough into the board to risk damage to the cutters.

25 A portable thicknesser is great for cleaning up reclaimed boards but carries a strong risk of damaging the blades on nails and screws buried in the boards. Use a metal detector to reduce this risk. ■

A homemade sub bed is a necessity if you want very thin boards, some guesswork is needed for the initial height setting, though

A truly errant piece can be fixed and wedged to a reference board

Old boards with potential buried metal can destroy blade edges, so take care

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Geometric puzzle

Exercise your brain with this fun puzzle from **Rolando Pontalti**

PHOTOGRAPHS COURTESY OF LEGNOLAB MAGAZINE

Most of us have done a bit of head scratching over an interlocking wooden puzzle at some point. They are charming objects indeed, so I decided to provide this project for a small interlocking structure using magnets to join the pieces.

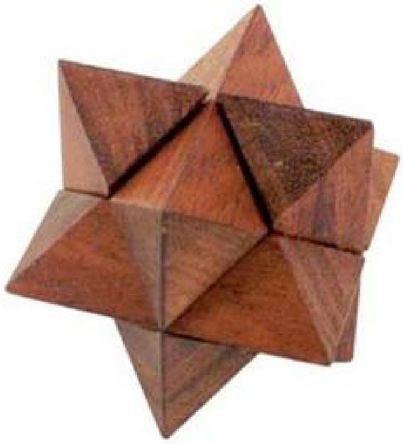
This type of wooden puzzle is called an interlocking puzzle because it is self-supporting. The first step to take it apart – and the last step to assemble it – involves sliding parallel surfaces. When assembled, such objects do not split unless someone disassembles them on purpose, and no support is needed to keep them together. They can have any shape, but they are usually based on a polyhedron, or a multi-sided solid which is the base for the geometric relationships or, in some cases, is the pattern for their final appearance.

One of the most common and somewhat hackneyed interlocked puzzles is the so-called 'Escher Star', or diagonal star, made up of six identical pieces. It dates back to over a century ago: we know it was sold in 1875, even though the only registered patent was recorded in Switzerland as late as 1946.

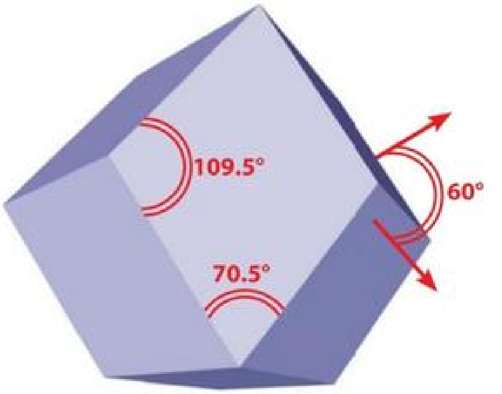
If you are looking for information about design and construction techniques for interlocking puzzles you will discover a very interesting world of applied geometry and precision woodworking. The Escher Star is so common because it is not very difficult to assemble and can be produced at a very low cost. The same polyhedron can be the basis for dozens of very different shapes and with widely varying levels of difficulty. The most elaborate ones, which are still made up of six pieces, are real puzzles even for experienced craftsmen. It is clear that accurate manufacturing is a critical factor, making this a demanding but very rewarding challenge.

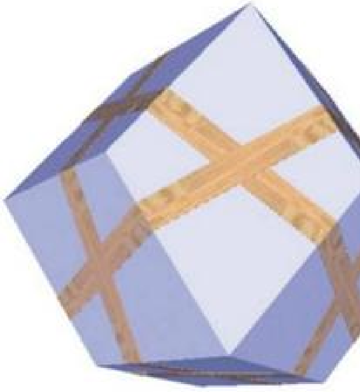
The complexity of such objects and the fact that they require valuable hardwood to be as steady as possible against variations in temperature and humidity, explain their low availability. Only dozens of people around the world create these objects as their only source of income and design, build and sell their wooden interlocking puzzles to collectors.

In this issue I will provide step-by-step instructions for the construction of the Tetrapuzzle – 'Tetra', i. e. four, hexagons. The structure is based on the same polyhedron as the Escher Star, but has a very different shape, possibly even unrecognisable for those who are less experienced in geometry. It is made up of four interlocked hexagons that form a very engaging cage. It is in fact relatively simple to construct and assemble – a perfect first exercise to get you acquainted with wooden puzzles.



The Escher Star and many other 3D puzzles are based on a polyhedron made up of 12 diamond sides with angles as shown in the first drawing. This means that if you trace the bands surrounding the polyhedron as shown in the second drawing you will find that they are regular hexagons. Each of them has six sides and each of the 12 faces includes two, so four hexagons are enough to completely wrap the polyhedron





How to make an interlocking puzzle

There are as many methods as your imagination can conceive. The one I am proposing includes 24 pieces combined two-by-two in 12 X-shaped sub-units subsequently assembled to get the final shape. In order to make your work easier and introduce an attractive or, I would say 'magnetic' variation, the sides of the hexagons are kept together by little magnets, while the X units are combined with half lap joints.

I will start with 48 isosceles trapeziums with definite angles and the following sizes: longer base 62mm, height 14mm, thickness 5mm.

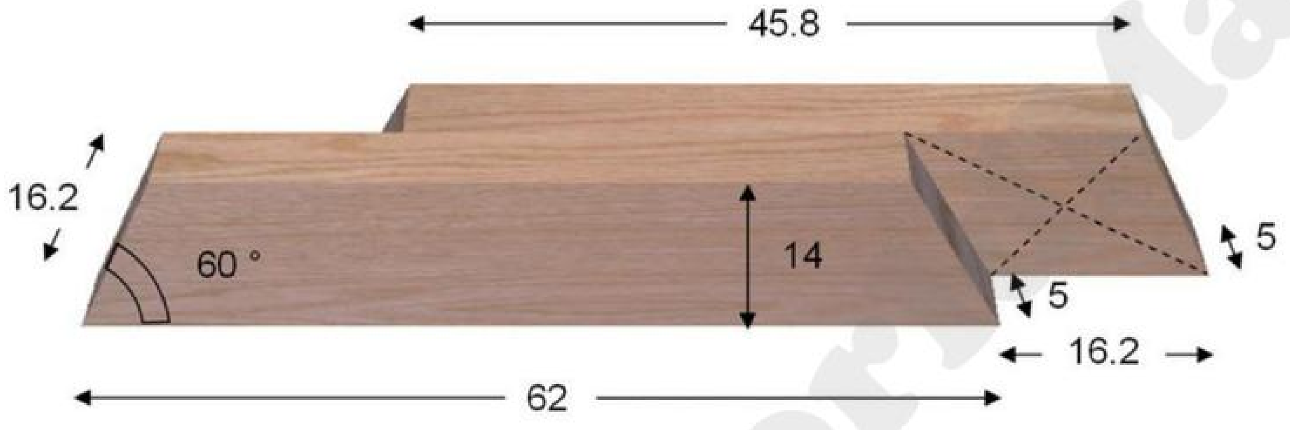
I must point out that assembly is assured for a wide range of values. Depending on your personal taste or the type of wood available, you can enlarge or reduce the object by scaling the sizes and you can also make the cage more or less thick.

You should use hardwood to guarantee resistance to any little repeated hits when disassembling and reassembling the puzzle or bumping the sides with sharp-edged vertices.

This project requires a mitre saw and a drill press only. I chose to minimise the number of power tools needed to make it possible for more readers, but you can choose different methods, for example using a router.

If you prefer to avoid preparing the timber, you might want to use PAR wood available in DIY and hobby stores. In this case you would choose a board having a 1 x 3 ratio – for example 5 x 15mm – and then cut it into trapezoidal sections of the desired length.

Set the mitre saw to a 30° angle and clamp a scrap piece cut to 30° to the vertical fence, measuring from the blade a distance corresponding to the trapezium's shorter base. After cutting the first end to 30°, flip the piece and press the end you just cut to the -30° stop, and cut again. You now have the first trapezium. Repeat these steps until you have 48 plus a good stock of test and spare parts. I suggest preparing around 60, using a length of 3.5 metres. Please note that some guards have been removed for clarity.



The trapezium you need to make your Tetrapuzzle. This drawing does not include the holes and notches that are described later in this article

The workclamp is essential for safe working

One of the cut trapeziums

The jig is used initially for gluing up

Two pieces assembled in the waxed jig

Drilling the magnet holes using the jig

Both holes now drilled

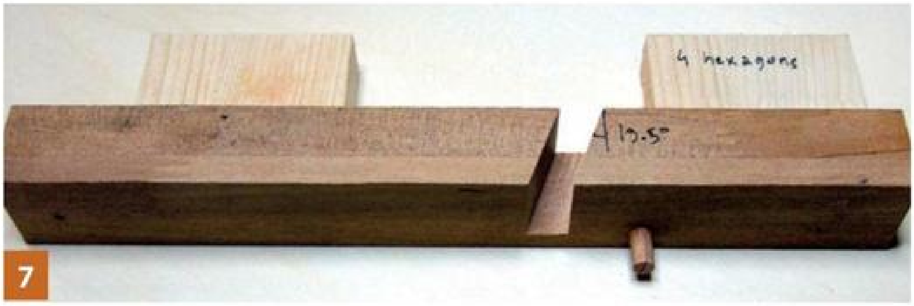
1-2 Clamp a -30° stop – behind the blue clamp handle – about 46mm from the blade set to 30°, assuming the clockwise rotation as positive. After securely clamping the small pieces, cut about 60 trapeziums, like the one shown in the picture. If you pile more pieces of wood, you will obtain more trapeziums with a single cut.

3-4 Use some scraps resulting from the 30° cuts to make a jig. It will be useful for drilling, too. In this stage it allows you to line up two trapeziums before gluing them. I used an aliphatic resin glue but, as the surface to be glued is wide, you can use regular wood glue. You will need 24 such units, though I recommend making some extra. To avoid accidentally gluing the jig, you can apply wax to it.

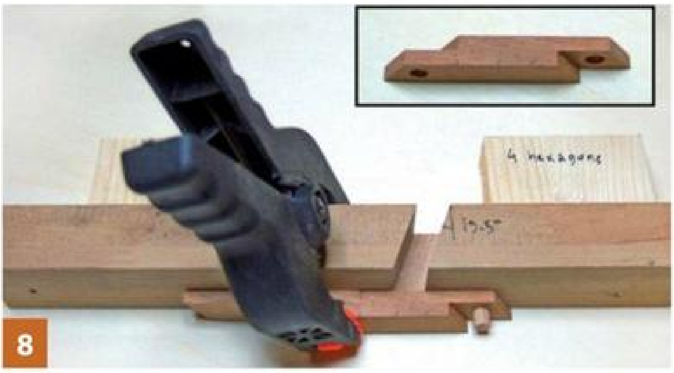
5-6 Place the pieces accurately on the compound table or use some stops on the board, drill 6mm diameter holes for the magnets. A variation to this solution is to insert a 10mm beech (*Fagus sylvatica*) dowel in one of the holes, while leaving the other void. In this case the holes must be exactly in the centre of the diamond where the joint rests. This variation requires more accuracy and makes assembling the puzzle more difficult.

7-9 The next part is the most demanding in the project: making cutouts with the mitre saw. You can choose alternative methods, like using a router, if you prefer.

First make a jig for the notch to be made on the longer or shorter base. The piece is secured to the jig by through dowels. The spacers in the back will be between the jig and the vertical fence. Their angle is set to 19.5° and the blade should be at the end of the notch, so that the centre of the blade is aligned vertically to the piece and the depth of the notch will be even.



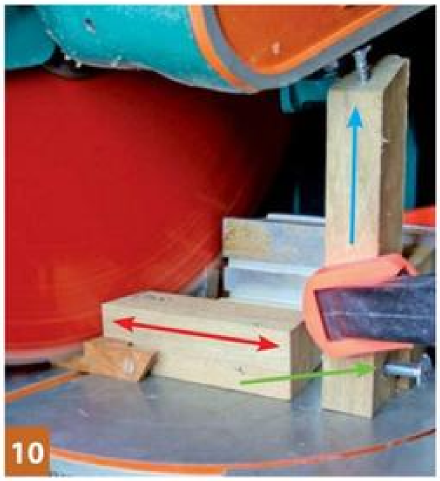
The blade needs to be set so the notch is flat bottomed



Note how the dowel locates the component

Ready to notch the shorter component

10-11 The notch results from some contiguous cuts, made by placing adjustable constraints – in green – that stop the movement – in red – of the jig and the blade travel – in blue. You should make the adjustments carefully in order to cut the notch exactly at the centre of the piece. To do so, proceed by trial and error. Make the first cut, turn the machine off, rotate the piece by 180° and check that the blade is still centred to the kerf, otherwise re-adjust the stops.

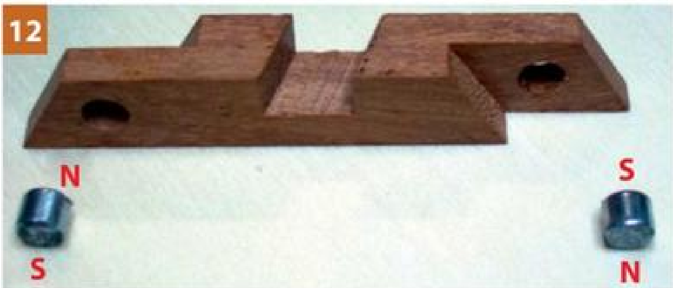


The vertical piece – on the right – has an adjustment screw

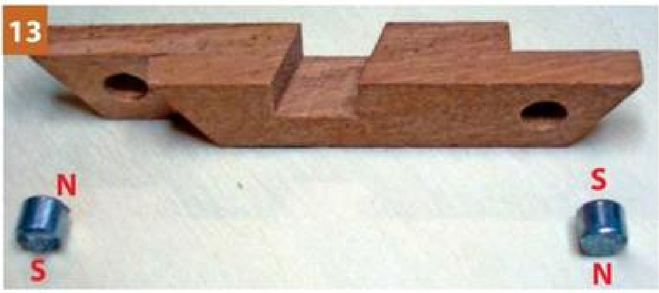
The jig is moved sideways between cuts

12-13 The last step in this process is gluing the little magnets. Since their power is remarkable, I have chosen a two-component epoxy glue with long setting time – about two hours – in order to have the time to assemble all the 48 pieces. UHU Plus 300 meets these requirements and does not yield despite repeated manipulation. For magnetic polarity, I used the layout shown in the pictures: in each hexagon the pieces notched on the shorter base always alternate with the ones notched on the longer base.

This way the assembling process is simpler because similar pieces, which should not be contiguous, naturally repel each other and the hexagon with alternate notches is the only allowed configuration. The puzzle was finished with shellac applied with a brush and finally matted with a sanding block. Avoid using steel wool as it can damage the magnets. Assembly is not very difficult and does not require much explanation. ■



The magnet pole orientations



The same for the second set of components

If all cuts are correctly made you can clip and unclip the pieces

LEGNO lab

This project comes courtesy of *Legnolab* magazine

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Bird feeder

PHOTOGRAPHS BY BRYN EDWARDS

Turn this simple feeder by **Bryn Edwards** just in time for spring

It seemed like a good time to have a clean up, lying beneath my lathe were some oddments of softwood, which I said "I'll do something with", but I hadn't got round to it. It was too good to throw away, and now was the time to use it – bird feeders were on my mind, and so it was this that I was going to use them for. The softwood measures approximately 100mm square, and of lengths of around 230mm, also when tidying up I found some timber treatment, one in dark green and the other, a rich cedar.

1 Use some softwood around 100mm square and approximately 230mm long. Centre the piece and start to round the wood using a spindle roughing gouge.

2 When you have finished roughing out, use a skew chisel lightly down the piece to make it smooth.

3 Holding the skew chisel on its side, make a cut on the edge of the timber, do this on both sides.

YOU WILL NEED

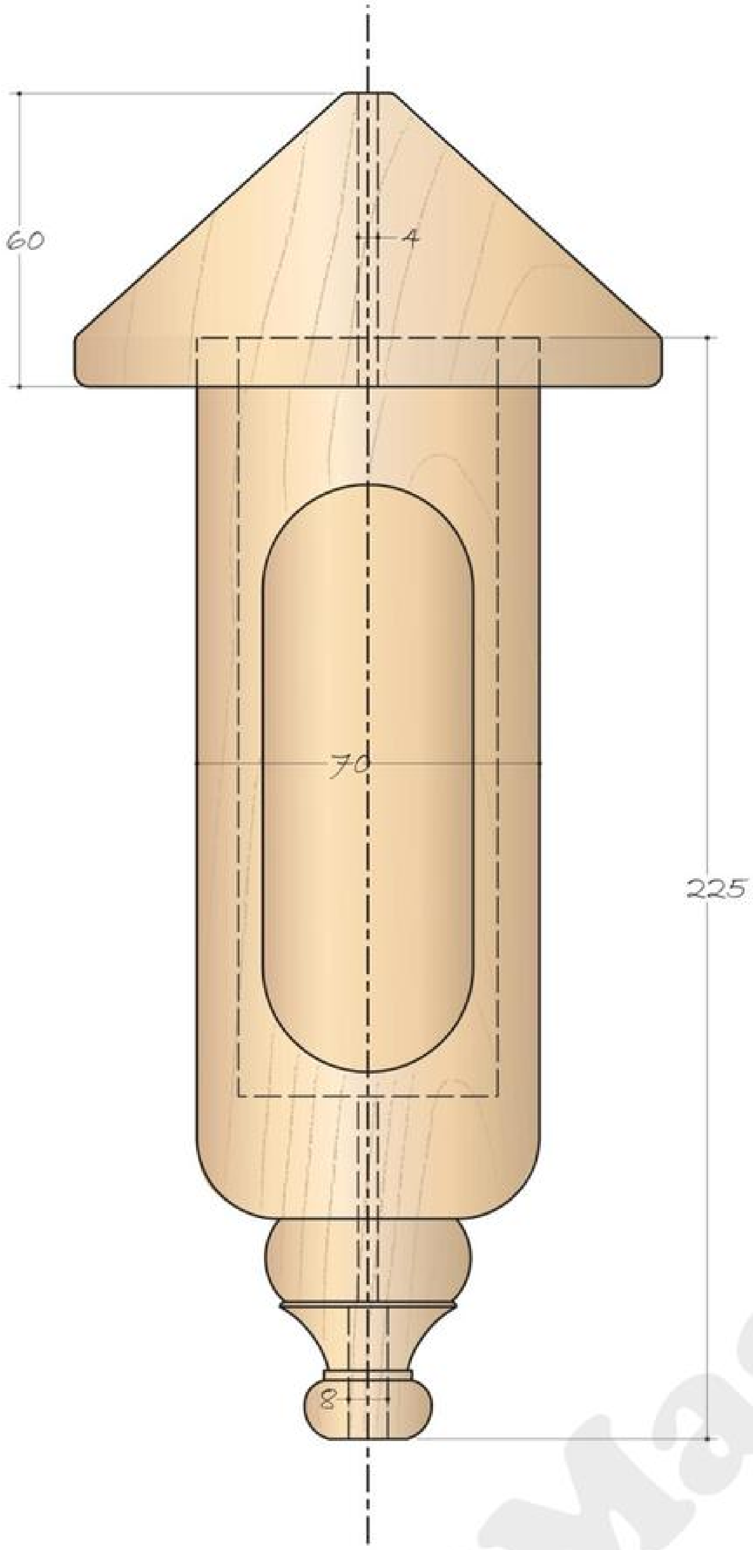
19mm spindle roughing gouge

12mm skew chisel

10mm beading/ parting tool

10mm bowl gouge

Other:
Jacobs chuck
Forstner/saw bit with extension arm



4 With a chisel, cut down one, so that the four jaw chuck will grip.

5 Now, take out the drive, and replace with the four jaw chuck. Place the blank in it, making sure it runs true, then drill with a 53mm drill. Keep on drilling – I had to fit an extension to drill to 205mm depth.

6 When you have done that, take the blank out of the chuck, reverse the blank, and drill a hole to take the fine rope. You must drill the hole a little bigger so that the knot goes into the wood.

7

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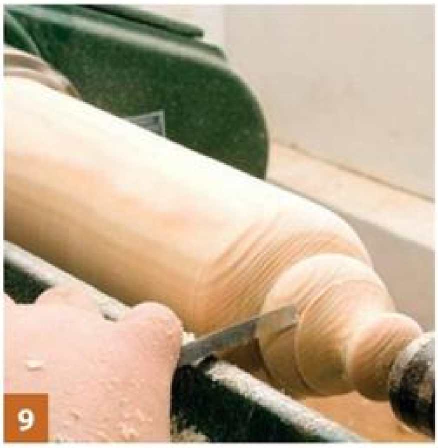
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7 Mark out the depth of the hole on the outside.

8 Now, carefully turn a finial using a skew chisel, to set off the end.

9 The next step is to tidy up the turned finial.

10 Now mark out on the top of the blank...

11 ... and you can then mark the bottom...

12 ... and the final step is to complete the side, going up the two marks you have created.

13 The width is added, now you have the all the marks.

14 Take the body out of the lathe and cramp it in the cradle on the bandsaw. Start to cut away the wood that is not needed.

15 Continue with the cutting, the other side also needs to be done at this stage.

16 The top of the feeder is next to be tackled, for this you will need to glue two pieces together, ensuring that each piece has the grain running the right way, then glue them together – make sure that it is a waterproof glue – then cut out using the bandsaw.

17 The faceplate needs to be used for this operation; my method is to put a piece of MDF onto the faceplate, then with hot glue stick the piece of wood to it; this will ensure that it is secure. I put three spots of glue onto the MDF.

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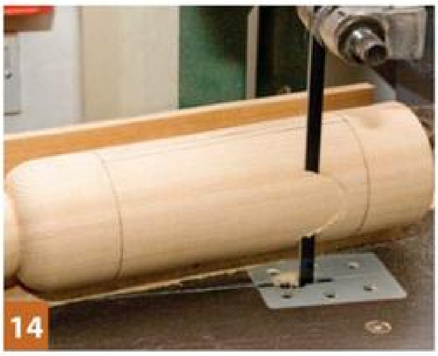
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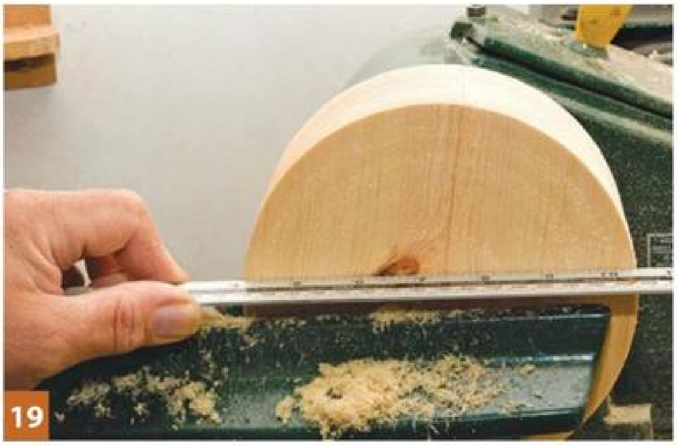
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26

18 Turn the faceplate over onto the blank and hold it while the glue sets. Place the faceplate onto the lathe to begin truing up.

19 You can now check to see if it is square.

20 Mark out the diameter of the bottom of the feeder, then cut away this piece with a bowl gouge. Check to see if the bottom of the feeder goes into the top.

21 Cut away a groove, near the edge of the top, to prevent water going into the feeder.

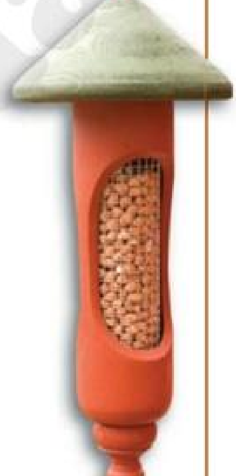
22 Sand the underside of the top, then drill a hole in the centre to accommodate the rope.

23 Turn the top around to drill the last part of the hole.

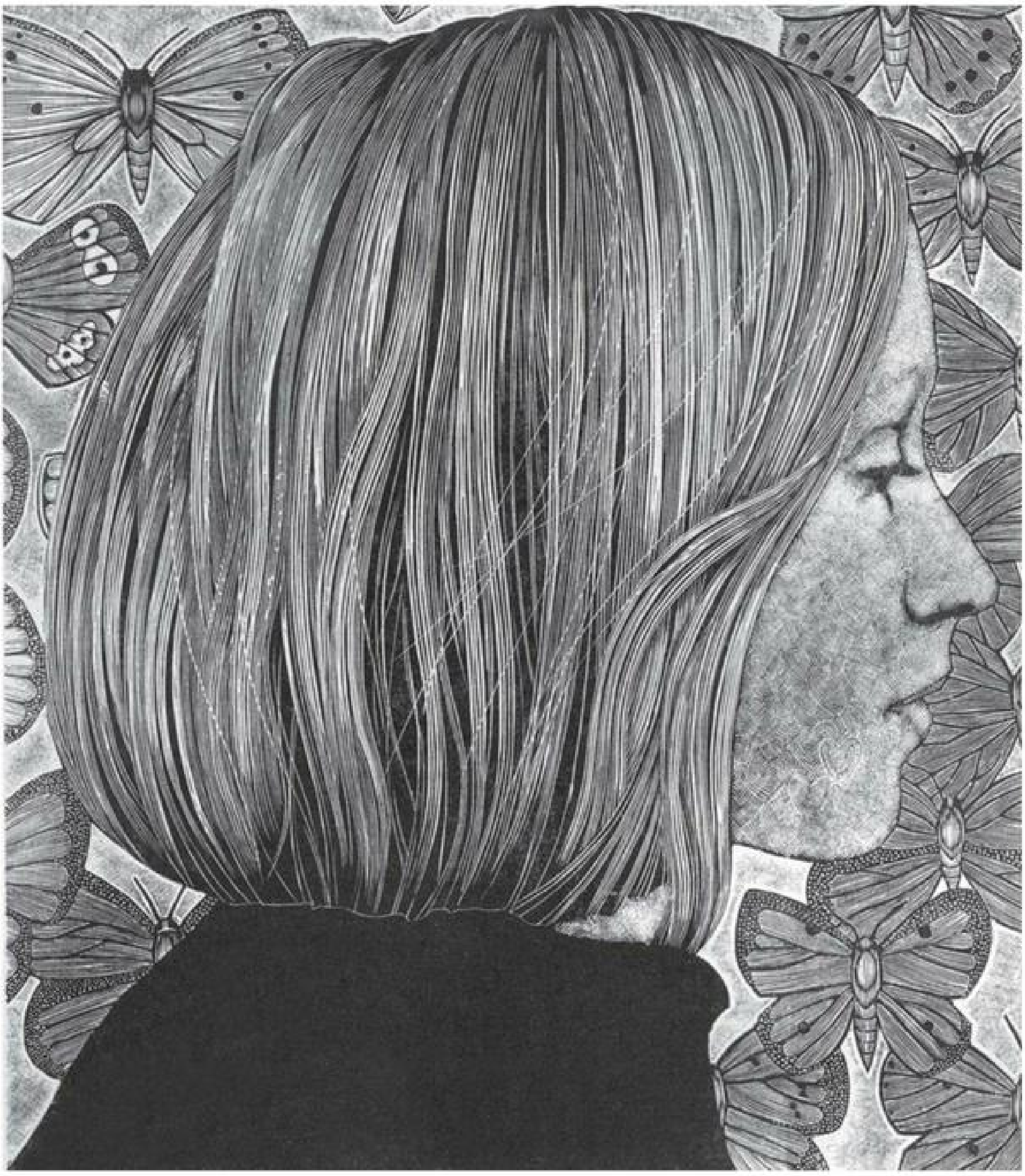
24 Now it's time to turn the top of the bird feeder. Mine was a simple straight line, but yours could be different. Turn the last part of the roof using a scraper.

25 Put a good coating of timber treatment on, inside and out.

26 Cut a piece of 6mm square weld mesh and roll into a cylinder. Here are the finished components ready to be assembled. Fill it with peanuts or seeds of your choice.



27 Your finished feeder! ■



PHOTOGRAPHS BY CHRIS DAUNT, UNLESS OTHERWISE STATED

Magda with Hearts, the first in Chris Daunt's series of wood engravings inspired by his daughter

Chris Daunt & The Society of Wood Engravers

Simon Frost speaks to an important figure in the world of wood engraving

Digital media dominates the profession of illustration and design today; it's quick, it's affordable and with the right skills there's very little that can't be done to order. You could be forgiven for thinking, then, that the art of wood engraving would be a thing of the past, sequestered to the plates of dusty old fairy tales in second hand bookshops – but thankfully, that's not the case. I spoke to master engraver and wood block maker Chris Daunt to find out about this incredibly skilled craft, where woodwork and artistry meet.

Wood engraving

Born as an art form towards the end of the 18th century, wood engraving is an extremely intricate relief printmaking technique, perhaps most widely known in the form of book illustrations by artists such as Thomas Bewick, Gustave Doré and Eric Ravilious.

Delicate lines are created in the end grain of a dense hardwood, which is pivoted and rotated on a leather sandbag as the wood is engraved. The engraver uses specialised tools such as the spitsticker, graver and scorper, to form an impression on which only the parts that remain raised will contact the oil-based ink, which is gently passed over it using a roller. The design can then be transferred onto paper, either by means of a platen type press, or by carefully rubbing the paper onto the block using a burnishing tool. The result is a very sophisticated print with a distinctive white-on-black appearance, by its very nature as a 'relief' print – the direct opposite of the 'intaglio' printmaking used in metal engraving, where ink is transferred from within the incisions.

PHOTOGRAPH COURTESY OF WIKIPEDIA COMMONS – PUBLIC DOMAIN

Above: A barn owl from Thomas Bewick's *History of British Birds*

Right: Bewick's own engraving tools, housed in Newcastle City Library

Chris Daunt

Upon completing a degree in Fine Art in the late 1970s, Chris Daunt took some tuition from wood engraver Leo Wyatt, but it was several years before he took up engraving seriously. He took a somewhat roundabout route, becoming a Cistercian monk in the Scottish Borders for four years, before completing another degree, this time in English Literature, and then teaching English for a year in Poland. "It was all quite a complicated start… but that's another story!" He goes on; "I became an illustrator, principally in wood engraving, woodcut and linocut. My first wood engraving work included making things like the artwork for sausage packaging and wine labels, in fact, there are still sausages in supermarkets with my wood engravings on their packets!" Wood engraving as a medium in advertising, he explains, is generally used as a way to convey a sense of tradition; "If a company wants to put across an image of authenticity, or a sort of earthy, wholesome feel, wood engravings have that quality, which is why you still often see them on things like wine and whiskey labels, or various organic products. The handmade art form suggests the same of the product." However, the scope of his illustrative work does not stop there; "At the less commercial end of things, I've made illustrations for the Folio Society, private press publications, newspapers and magazines." His book illustrations include Folio Society editions of works by Philip Pullman, Vita Sackville-West and Jean Rhys.

When I asked Chris about his influences, old and new, there was only one place to start; "Thomas Bewick is really regarded as the father of wood engraving; he didn't invent it, but he made it into an art form during the late 18th and 19th century. He also has a special significance to me, as he was born and worked close to where I come from and live and work now, just across the Tyne."

Chris with his treasured Albion press, a gift from the family of the late English engraver Monica Poole

The Albion press, manufactured in the 19th century by Hopkinson and Cope of Finsbury, London

And that isn't where Chris's links to engravers of the past ends, he goes on, "Coming into the modern day, I admired the work of Monica Poole very much. I sent her some work for appraisal and she gave me some very useful criticism. We stayed in contact for a while, and after she sadly passed away in 2003, I received her beautiful 19th century Albion platen printing press as a gift from her family." Around the same time, something of a crisis occurred in the world of wood engraving, and Chris was handed an opportunity too good to refuse...

Block making

In 2003, the last remaining producer of wood engraving blocks in the country, T.N. Lawrence, announced suddenly that they were to cease producing blocks, threatening the continuation of the art form as a whole. As a member of the Society of Wood Engravers and having been making his own blocks for several years, the Society approached Chris with an offer to fund him for equipment and supply a bursary to give him some time to perfect his methods, so that he could replace the country's sole commercial producer of wood engraving blocks. It wasn't a difficult offer for Chris to accept; "The block making business was a great way for me to get out of the commercial side of engraving and just concentrate on the art. Now my day job is making blocks, and I'm freed up to make engravings of my own choice. At the moment I'm working on a series of portraits of my daughter, which I once would have struggled to find the

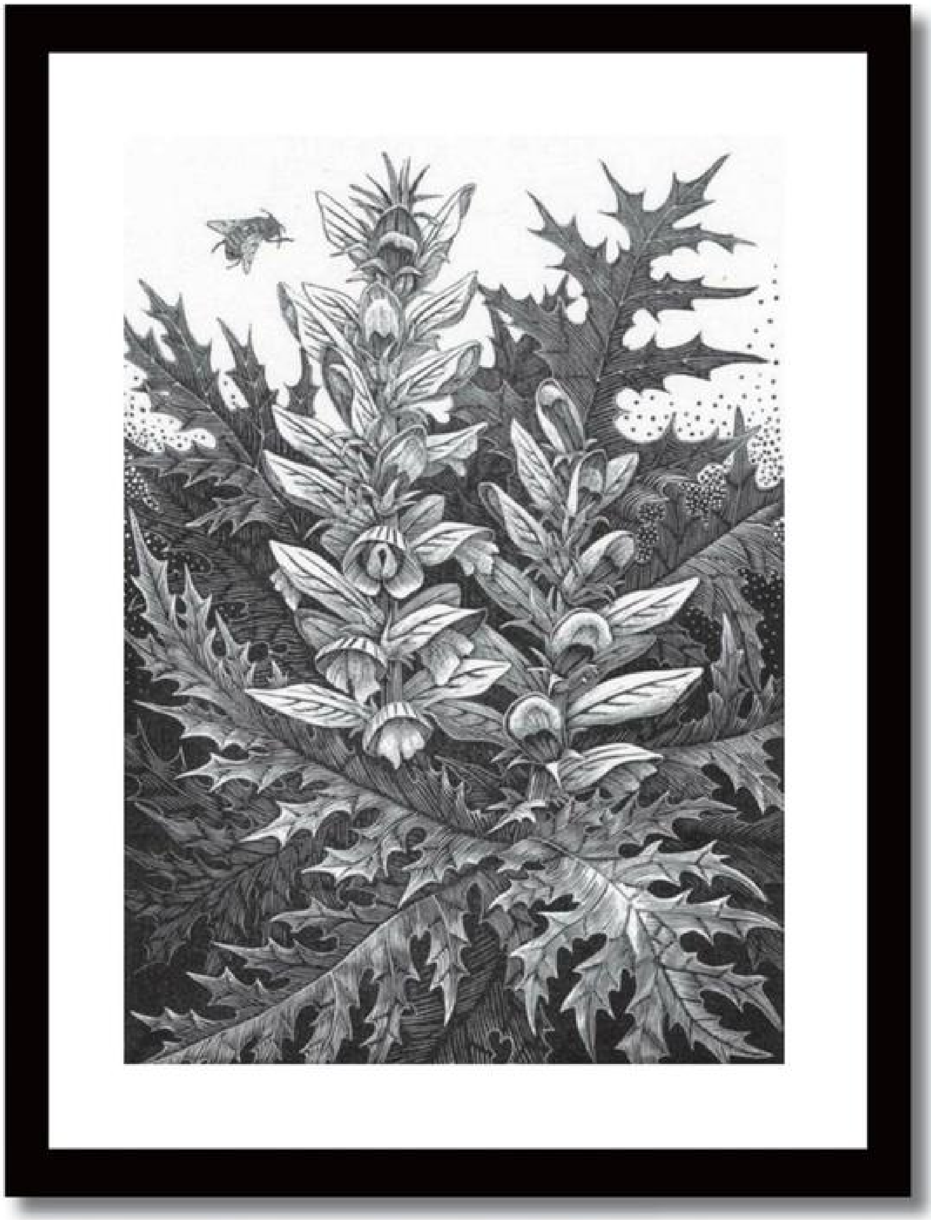
Chris engraving onto a block using a spitsticker

Rolling the oil-based ink onto the engraved block

Peeling back the print after pressing the paper to the block

A fine completed print in all its glory

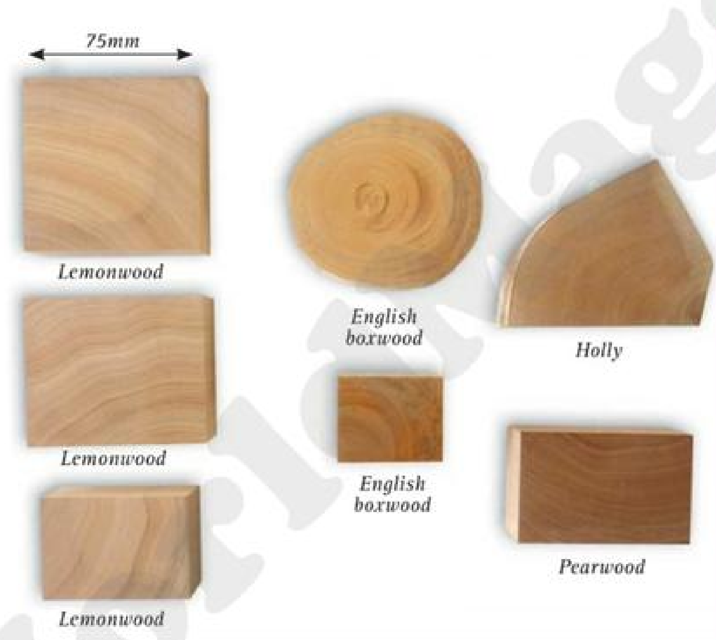
A set of facsimile Bewick blocks, made by Chris for the Laing Art Gallery



PHOTOGRAPH BY GERI WADDINGTON

'Acanthus', an engraving by Geri Waddington, who as well as an artist is the General Secretary of the Society of Wood Engravers

time to do." The blocks are generally made from boxwood *(Buxus sempervirens)* or lemonwood *(Calycophyllum candidissimum)*. Engravers always work with the end grain, as it has no directional properties – as opposed to the woodcut style, which incorporates the side grain. "What you want from the surface is for it to be anonymous, so the properties of boxwood make it the perfect medium for engravers. There is no visible difference between the heartwood and the sapwood – it's completely even. It is an extremely dense wood, but doesn't have the brittleness you find with tropical hardwoods, so it cuts beautifully – the fibres are close enough to hold up to exceptionally fine detail and cross-hatching." The other useful property of boxwood is its high level of durability; "Today, the usual run of prints will be around 75, up to a maximum of about 250. But for Gustave Doré's illustrations the same block would have been used for thousands of impressions, and for one of Bewick's newspaper mastheads the amount was close to a million." While box is the wood of choice for extremely fine work, lemonwood is a useful, and less costly, substitute; "It isn't as dense as boxwood, but it is much easier to cut large areas from and faster to work on in



Some examples of the end grain blocks used in wood engraving

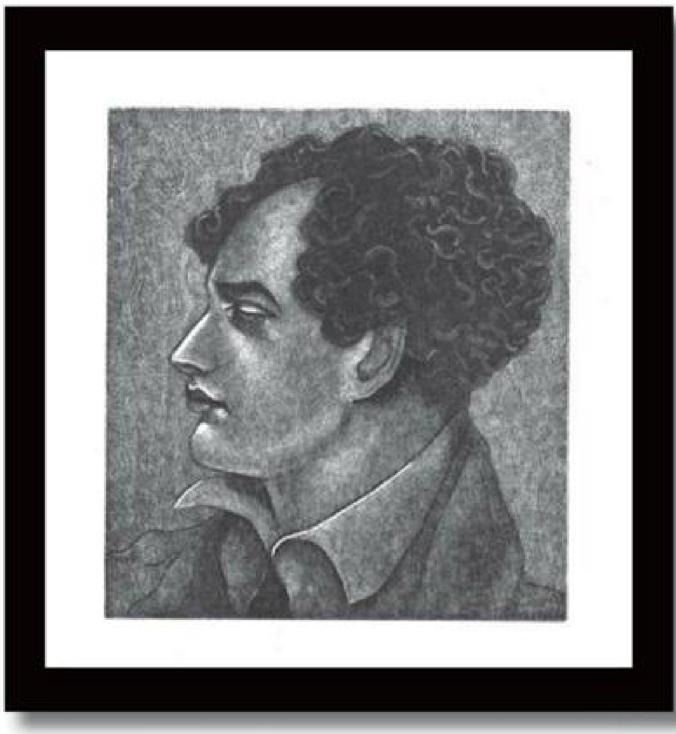
WorldMags

12 Lords **by Chris Daunt**

general. Much engraving work doesn't require the extreme density of boxwood, and lemonwood is still dense enough that you can work to a very fine detail – it takes a lot of practice before you can create detail finer than is possible on lemonwood. About 75% of blocks I sell are lemonwood."

The Society of Wood Engravers

Founded in 1920 by a group of artists including Eric Gill and Robert Gibbings, the Society of Wood Engravers exists to promote the art form, acting as a platform for exhibiting work and a communication tool for engravers and indeed anybody with an interest in the subject. An annual touring exhibition is run by the Society across the UK, and the SWE even arrange events overseas. "The Society of Wood Engravers has been hugely important for me, as it is for wood engraving as a whole." Chris says, "They helped me to set up my block making business, which again not only helped me but the whole art form, by making sure that the specialist blocks remained available." Chris also edits the SWE's quarterly journal, ***Multiples***, which has a circulation of around 500: "Editing the journal keeps me in touch with what other engravers are doing, too, which is very useful."



Lord Byron **by Chris Daunt**

A man in a unique, central position in the world of wood engraving – the UK's only commercial producer of blocks, an experienced and skilled artist and the Editor of the Society's journal – there seemed no better person to ask the question: What is the future of wood engraving? "As far as the commercial side of engraving is concerned, illustration is a very competitive industry and I suspect there can only be a handful of engravers who do it commercially – it goes in and out of fashion, and you are at the mercy of advertising trends and creative directors and so on. But people do make a living by combining their wood engraving practice with teaching. I teach up and down the country myself, and attendance is never a problem. It's unfortunate that art schools teach traditional printmaking techniques less and less, but this reflects an industry that is very digitally orientated and traditional printmaking is now a niche interest, so you have to seek private courses at places like independent print studios." But despite less ready access to tuition, there is no shortage of people practising engraving. While as a commercial art form it can be impractical, as a fine art medium, wood engraving is evidently flourishing; "The amount of work submitted to the Society of Wood Engravers has increased dramatically. And as a craft, I have no doubt it will carry on and on, because the process itself is such a pleasure – there's nothing like pushing an engraving tool through wood, the feel, the sound, the smell, working with linseed oil-based inks; it's a very special hands-on process which can't be matched." ■

Contact

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Blanket chest

Richard Parrott makes this blanket chest to match his Cornish cottage

For Pull-out Plans see P40

On the landing of our Cornish cottage was a hideous chest of drawers made of white melamine-faced chipboard. It offended the eye and should have been consigned to the scrap dump years ago. My only excuse was that I had spent the nine years since my retirement making everything from items of furniture and kitchens, to a staircase for various members of my family. But we needed storage for overflow from the adjacent airing cupboard and my wife suggested a blanket chest.

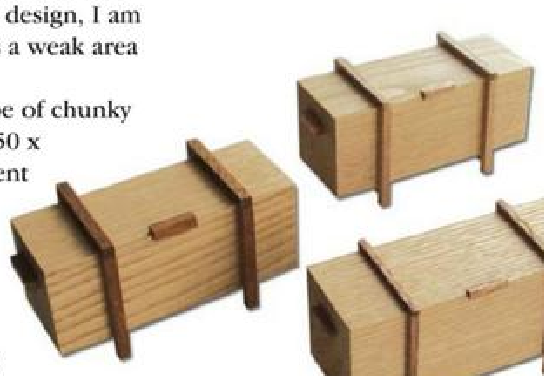
Design

I sketched out a few ideas based on traditional designs, but my wife wanted something a bit more modern though appropriate for our country cottage, which has beamed ceilings. I settled on a simple box supported by an external frame of fairly substantial proportions in a contrasting wood. This gives the impression of the chest being suspended within its frame, the latter also complementing the beamed ceilings in the cottage.

The landing where the chest will be placed is narrow with a shallow window recess, allowing a maximum length of 1,150mm, a maximum width of about 475mm and a height of 600mm. I knocked up a 1/10th-scale model to check the proportions and to gain my wife's approval – I have never regarded myself as artistic and having had no training in design, I am very conscious that this is a weak area of mine!

I wanted the frame to be of chunky proportions, made from 50 x 50mm stock to complement the cottage beams. Somehow I was not happy with it but I was not sure why, so I ended up making two more models with frames of 40 x 40mm and 35 x 35mm stock, and the consensus of family opinion went for the 40 x 40mm.

This design obviously precludes the use of butt hinges between the box and its lid. The frame itself has to be hinged, and butts here would look awful as well as being a weak point in end grain. The answer then had to be either finger joints or knuckle joints. Being always up for a new challenge, and having a slightly masochistic tendency, I chose knuckle joints for the sake of appearance.



1 **The various scale models that I tried before arriving at the final design**

The drill is constantly withdrawn to clear the waste

Marking the barrel, shoulders and V-shaped clearance

The box is made from manufactured 19mm MDF faced with quarter-cut American white oak (*Quercus alba*) with Brazilian mahogany (*Swietenia macrophylla*) for the frames.

First cuts

I tackled the difficult bit – the knuckle joints – first, cutting the rear post and the top bar significantly overlength so that if I made a mess of the knuckle joint, I would be able to chop the end off and start again – which I did! David Charlesworth's excellent *F&C* articles on the knuckle joint, republished in his book *Furniture Making Techniques, Vol 2*, are essential reading before starting. He has a novel approach where you start with a hole for the hinge pin and work outwards from that, rather than the traditional approach where the hole comes last.

Actually, of course, before you get to the hole, the careful preparation of the stock is crucial and the Brazilian mahogany for the frames is machined to 42 x 42mm, and hand-planed true and square to 41 x 41mm, the extra 1mm allowing for any necessary adjustments later.

Drilling

I have an old pillar drill with the 'Sealey' badge bought at a Wembley woodworking show 30 years ago, and on checking it for verticality, I was surprised how accurate it was, needing only a 0.6mm shim under my drilling jig. I keep a box full of shims ranging from old credit cards, plastic labels, paper, and card of various weights with their thicknesses marked with felt tip pen.

The hinge pin is 6mm – nominal – brass rod which is actually 5.85mm in diameter, so I used a 5.9mm drill. Drilling halfway from each side was 0.05mm, which gave a firm fit for the pin. The hole in the fixed part – containing two of the five knuckles of the joint – is drilled only to 8mm, through the waste part which will be removed later. This is extended right through with a 3mm drill so that the barrel marking aid can be pushed out from the other side.

Marking out

Precise marking out is essential, and I used a knife and a pair of dividers with one point, sharpened to a cutting blade. The barrel marking aid is simply an 8mm length of brass rod centre-punched exactly in the centre of its diameter. The rod is inserted in the hole and used to locate the point of the dividers when marking the barrel, a procedure that is well described by David Charlesworth; it is also worthwhile to use a sharp pencil to mark the diagonals through the centre to give the position of the shoulders.

Next, draw lines at right angles to these and tangential to the inner edge of the barrel; these meet in the middle of the stock and are quite useful when it comes to lining up the 45° guide block used in cutting the V-shaped clearance for the middle three knuckles.

Cutting knuckles

The knuckles are 8mm wide but because the wood was prepared to 41 x 41mm, the outer knuckles of the moving part are 8.5mm wide. They are cut with a bandsaw and I used a new Duredge ½in x 14tpi blade to produce a kerf of 1.16mm. With just two fence positions, all the cuts can be made by flipping the work over and by indexing laterally the mating component by the width of the kerf. I used a 1mm thick, 300mm steel rule plus shims to 1.16mm.

The waste was cut out from the knuckle using a bandsaw with a sharp, new blade

Using a jig to cut the V-shaped clearance between the knuckles

The knuckle before final shaping

It is important to take care not to cut beyond the point where the shoulder meets the barrel, so this must be accurately marked beforehand, and a fence stop used. Allow an extra 0.5mm for safety – this will be removed when chiselling out the clearance for the knuckles.

Next, the waste between the middle three knuckles is removed. To get a nice square cut, I used my bench mortiser. The outer waste on the fixed component is not removed at this stage, this is so that you don't lose the barrel marking.

V-shaped clearance

A 45° guide block is used to make a V-shaped clearance for the middle knuckles, and is lined up using a steel rule with the pencil mark described above, and clamping in a vice. Carefully gluing some 320 grit wet & dry sandpaper to the abutting face of the guide block helps to reduce the chance of slipping while transferring to the vice. A 12.5mm firmer chisel is used to remove the waste.

It's only when you do these things that you discover the pitfalls, and accuracy here is critical for two reasons: firstly, you only have to remove the smallest amount, too much from the 'V' will open up an unsightly gap between the shoulder and the barrel; secondly, you will find on assembling the joint that there is a fraction of a millimetre discrepancy in concentricity of the barrels of the mating parts, requiring some judicious sanding with a flat block, with the joint in the closed and open positions, and positions in between.

This process will surprisingly rapidly take the barrel away from the edge of the V-shaped clearance and open up the same gap. This was the reason for one of my two discards! Even so the joints ended up with rather larger gaps than I would have liked. The same will apply when cutting the curved clearance in the fixed part for the outer knuckles of the moving part, using an in-cannel gouge.

Nearly there

Next, the spaces between the knuckles are temporarily filled with tightly fitting hardwood plugs prior to shaping the barrels, the shoulders are cut and the outer corners sawn off before shaping the barrel with a low-angle block plane and a small shoulder plane. The turned hardwood buttons at each end of the barrel act as useful guides and prevent breakout – a layer of Sellotape wrapped round them gets caught by the plane blade when you have gone far enough.

The plugs between the knuckles are now removed and the joint assembled before making the final shaping with 320 grit paper.

The other parts of the frames — front legs and the rails joining the front and back legs underneath the chest – are cut roughly to length, but no more is done at this stage. The frame has to fit precisely round the outside of the chest so will be done after the construction of the carcass.

I managed to obtain a 200 x

Almost there with the shaping

Spaces between knuckles are filled during shaping; the plane catches the Sellotape when you have gone far enough

The completed joint prior to cleaning up

The completed joint is well worth the effort

100mm sheet of 19mm MDF, which was veneered with American white oak (*Quercus alba*), with a nice quarter-cut face veneer.

The front and both end panels of the carcass can be cut from one length so that the grain can follow round. Each of the four sides is cut exactly to length and carefully squared off from the top edge. The width of the boards is left a few millimetres oversize, to allow for any breakout when machining the mitres.

Mitres

The mitres are cut with a large 45° 65mm diameter chamfer cutter, in my ½in router. To avoid accidental tilting of the heavy router while machining the mitres, an extra baseplate of 9mm MDF is made for the router, which has a straight edge extending 11mm beyond the flat edge of the router base. A guide bar is made from two layers of 9mm MDF, the top layer overlapping the bottom one by 10mm, separated by a 0.1mm shim of paper, to ensure that the router baseplate does not jam underneath it. A simple jig is made to set the guide bar the exact distance in from the end of the board for each mitre.

Biscuit slots are then cut in each mitre – four to each joint. These serve not only to strengthen the MDF joint, but also to locate the joint and stop it sliding around when gluing up.

The next job is to conceal the MDF at the top edges of the sides and ends of the carcass. I decided to use a contrasting colour rather than using white oak, and planed up 6mm strips of Brazilian mahogany. The sides and ends are now machined exactly to width using a straight cutter, and the edging strips glued and clamped on. I used my board clamp, which was quicker and easier as it does both sides or both ends at the same time, and ensures even pressure along the length of the edging strip. When the glue is set, the edging is carefully planed flush with a low angle block plane, followed by a cabinet scraper.

Finally, the rebate is machined in the bottom edges of the carcass to take the full thickness of the bottom panel of the chest.

The bottom of the chest is now cut to size to fit the rebate in the sides and ends. This does not, however, need to be absolutely precise because when the carcass is assembled and glued up, a 6mm rebate will be cut to take a mahogany strip to match the top edges.

The handle is dovetailed onto the lid and has a finger recess underneath

Lock and handles

Before assembly of the carcass, it is easier to cut the recess for the box lock, and cut the keyhole. I also inlaid a lozenge shaped mahogany escutcheon. The lifting handle at each end of the chest is glued with four biscuits, and I made jigs to accurately cut the biscuit slots in the end panels and in the handles themselves.

A simple jig is made to set the suite bar the exact distance in from the end of the board for each mitre

To avoid tilting of the router while machining the mitres, an extra baseplate of 9mm MDF is made for the router

Board clamps grip both ends at the same time, and ensures even pressure along the length of the edging strip

Finally, before assembly, I cleaned, sanded and finished the insides of the components of the carcass with four coats of acrylic satin varnish – Rustins – sanding down well between coats. The gluing surfaces, mitres and rebates were, of course, protected with masking tape.

Gluing up the carcass

Gluing up the carcass was obviously going to be difficult with four long mitred corners, and one pair of hands. I made some clamping aids consisting of 30mm wide strips of 6mm ply, cut just short of the length of the sides and width of the ends, with 45° blocks glued at each end. These are fixed to the outsides of the carcass with small pieces of double sided tape to stop them moving when applying the clamps. I also had strap clamps for the top and bottom edges.

A dry run was called for to check the fit of the mitres, and I did this on the workbench. The new biscuits were loose in their slots, so I put short lengths of masking tape round the corners to keep them together.

The mitres were fine, the biscuit slots just right, and the bottom panel fitted the rebates. The MDF surfaces of the mitres were sized with a thin mix of Extramite and, when dry, lightly rubbed down. This glue was chosen for the slightly longer open time which was going to be needed. In the event, it was hardly long enough as the job was done at 5pm on a summer evening with an outside temperature of 25°C, although cooler in the workshop! The bottom panel was placed, not glued, in the rebate to maintain squareness, and the carcass left overnight to set. I can well understand David Charlesworth's comments in his *F&C* article Under Pressure (issues 26-27) – reprinted in his book *Furniture-making Techniques. Vol.2* – when he says, "... an air of tension descends on the workshop as gluing approaches." It certainly produces the adrenaline!

To complete the main structure, the bottom panel, already finished with four coats of acrylic satin varnish on its inner surface, is glued into the bottom rebate. Finally, to cover the exposed MDF around the bottom edge of the carcass, a 19 x 6mm rebate is cut all round, and a mahogany fillet, mitred at the corners, is glued in.

This is less easy than it sounds because of the difficulty of getting adequate clamping pressure. Because of the need to clamp both horizontally and vertically, it is not possible to glue all sides at the same time. I glued the end ones on first using sash cramps vertically and horizontally at each corner, with strap clamps in between, and using specially made blocks.

When the glue had set, the long sides were done, and this required 10 sash cramps and the two strap clamps. Perhaps there is an easier way to do this but I couldn't think of one at the time! The chest handles are glued in place and clamped with deep throated G-clamps.

The carcass cramped up

Fitting the frames

With the stock prepared and the knuckle joints made, it just remains for the bottom rails to be tenoned into the front and back verticals. The distance between the shoulders of the tenons is measured as a fraction of a millimetre more than the width – front to back – of the carcass across the bottom. At this stage, the frames can be glued and clamped up. The

16 The frames dry-assembled

17 Gluing the frame to the chest

top bar is left over length until after the lid is fitted, and will then be cut off, with the end curved to line up with the front vertical.

Before gluing the frames to the carcass, their gluing surfaces are taped off and the frames finished with four coats of acrylic satin varnish, well rubbed down between coats. Likewise, the outside of the carcass is finished in the same way using a 150mm paint pad.

The position of each frame is marked on the carcass all round, and the frames dry fitted. Small wooden stops are then clamped to top and bottom edges of both front and back, to act as guides and to stop the frames sliding about when gluing. With the carcass bottom up, both surfaces are covered with Extramite, and the frames slide gently down between the stops. The top ends of the verticals are then lightly clamped to the carcass, and the carcass turned over. To protect the curved surface of the frame, a pad of 3mm leather is placed under the clamping block. I put a 56lb weight in the bottom of the chest to ensure good clamping pressure to the horizontal frame, then tightened the top clamps and put a spreading clamp inside to get good pressure to the verticals.

The lid

I was unable to source quartersawn American white oak in Cornwall so I went to a hardwood importer in Plymouth, and even they had to get it from their headquarters in Surrey, so I had no chance of selecting my own. None of the four 150mm boards I acquired was completely clear or straight. I selected the one with the best pattern of rays, and after a lot of hand planning and machining, I got enough straight and true material to cut all four parts of the lid frame from one board, although I could not avoid one small knot.

18 The lid is made up of a solid frame biscuited to the central veneered panel

19 The handle is dovetailed to the lid

These are mitred and biscuited to the lid panel, and when the glue is set, the whole is cleaned up with planes and scrapers, and sanded.

The lid is then offered up to the carcass. In order to accurately locate the top – hinged – part of the frame to the lid, I cut the heads off 25mm brass panel pins so that they were about 13mm long, and drilled 1.7mm holes to 10mm depth near front and back of each hinged member of the frame, and inserted the pins so that the points were about 3mm proud. With the lid exactly in place, the frame member is hinged down onto it to mark the lid.

1.7mm holes were then drilled into the lid to 10mm depth. The marking pins are replaced with pins which are cut to 20mm, the top frames are unhinged, glued and clamped to the lid using the guide pins for an accurate location.

The lid is then fitted to the chest, and its edges adjusted with block plane and scraper to be flush with the sides of the chest. The inner faces of the tops of the front frames need to be tapered outwards slightly to provide clearance as the lid comes down. The handle is dovetailed into the edge of the lid.

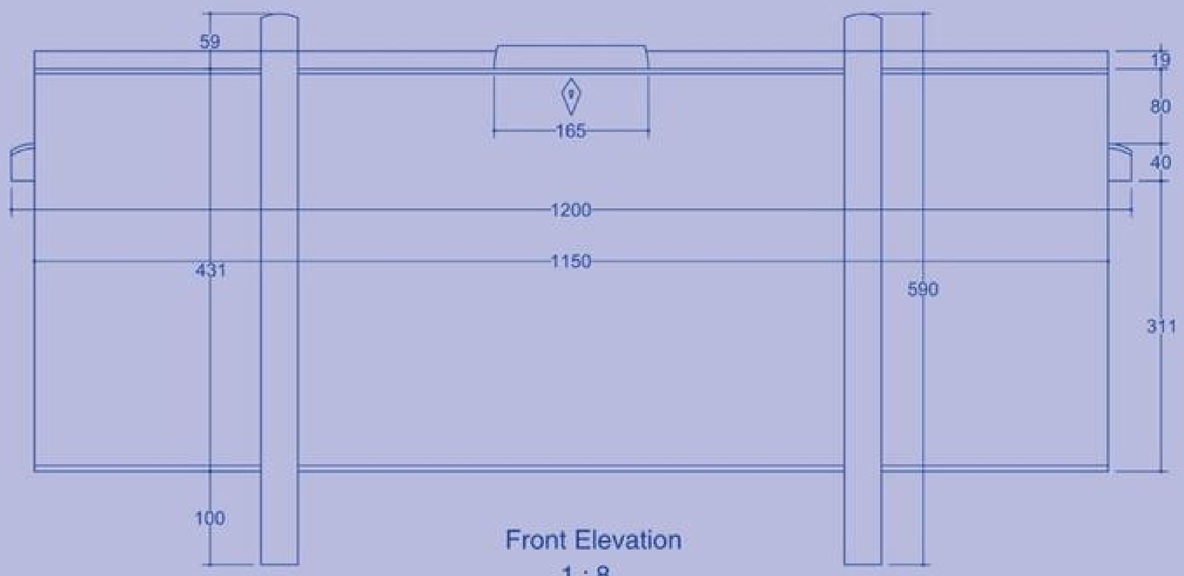
Finishing

All components had been given four coats of acrylic varnish, well rubbed down between coats before final assembly. The whole chest was rubbed down with 1000 grit wet & dry paper, and given a final polish with Black Bison wax.

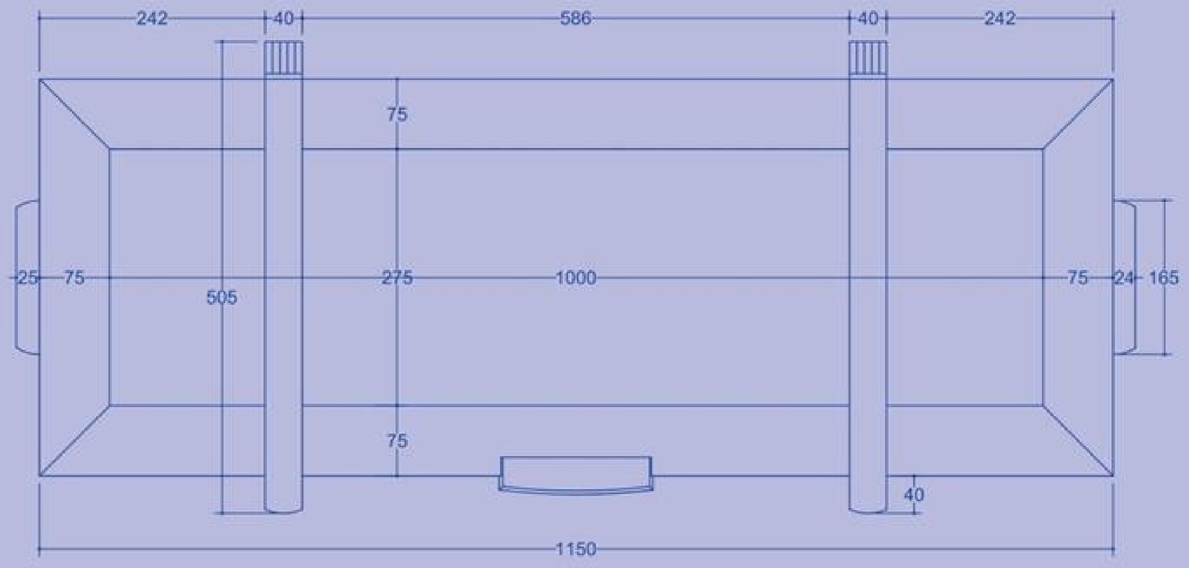
I was generally pleased with the result despite the mistakes, and my wife is happy with it on the landing. ■

20 The finished chest viewed from the back

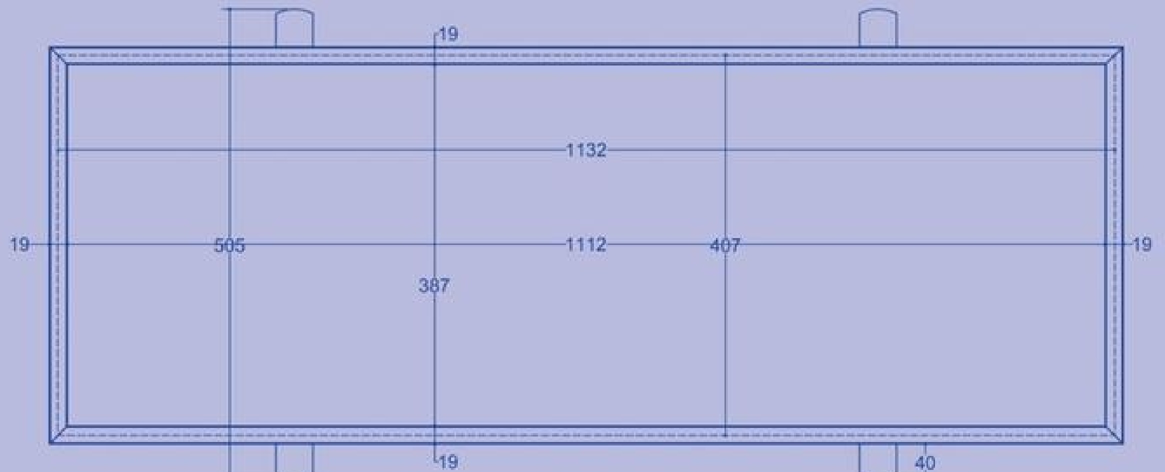
Your free blanket chest plan



Front Elevation
1 : 8



Plan of Top
1 : 8



Plan/Section
1 : 8

WOODWORKING
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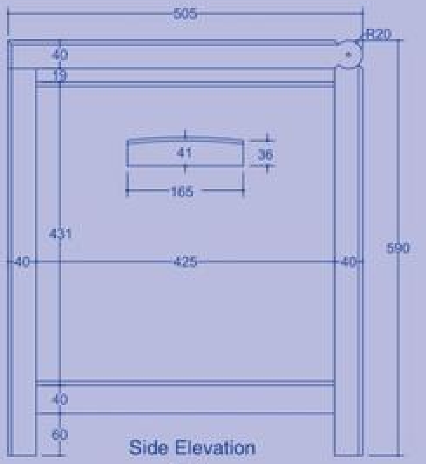
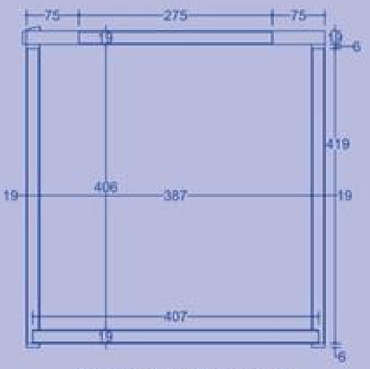
Cutting List

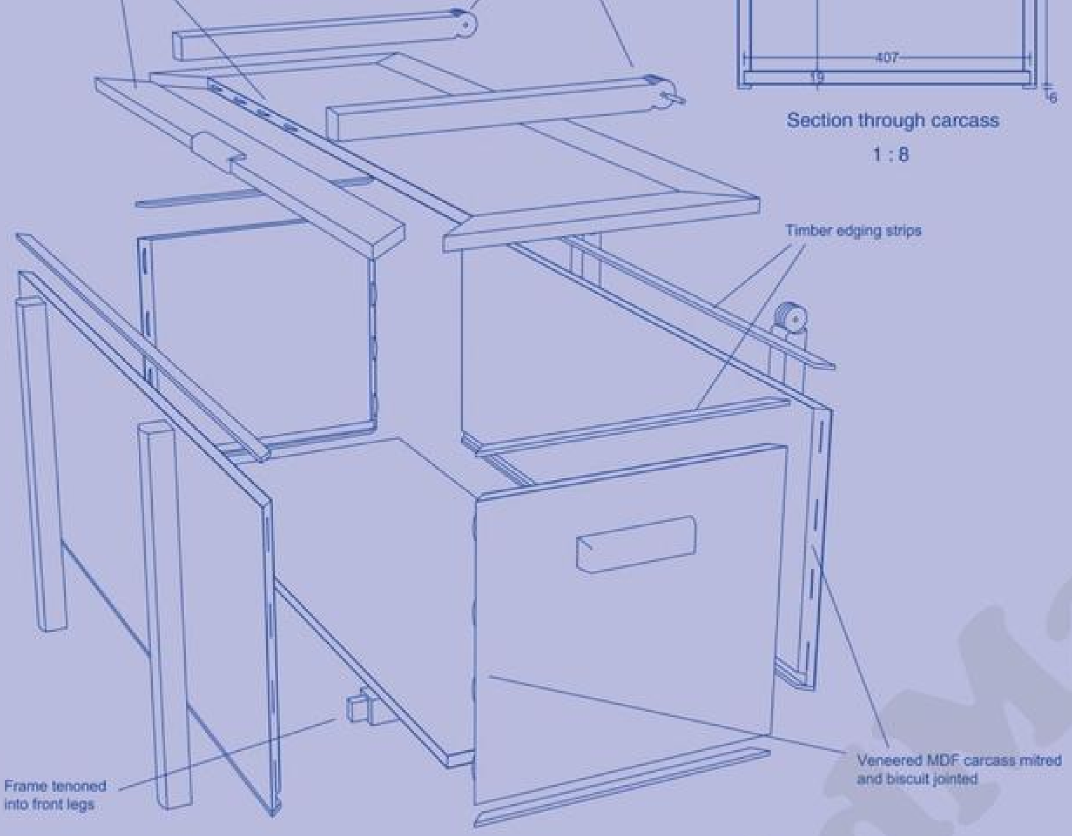
TOP FRAMING	2 @	1150 x 76 x 19
TOP FRAMING	2 @	425 x 76 x 19
TOP PANEL	1 @	1000 x 275 x 19
FRONT LEGS	2 @	550 x 40 x 40
BACK LEGS	2 @	590 x 40 x 40
TOP RAILS	2 @	505 x 40 x 40
BOTTOM RAILS	2 @	475 x 40 x 40
CARCASS FRONT/BACK	2 @	1150 x 419 x 19
CARCASS SIDES	2 @	425 x 419 x 19
EDGING FRONT/BACK	4 @	1150 x 6 x 19
EDGING SIDES	4 @	425 x 6 x 19
BOTTOM	1 @	1132 x 407 x 19
HANDLES	3 @	165 x 41 x 25



Side Elevation
1 : 8



Section through carcass
1 : 8



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Hot Stuff

Prices are correct at time of printing and inclusive of 20% VAT. Photographs and information courtesy of the manufacturers

Take a look at the tools, gadgets and gizmos that we think you will enjoy using in your workshop

TREND CraftPro Weatherseal router cutters

These new router cutters from Trend's CraftPro range are PTFE non-stick coated bearing guided cutters designed to create grooves for weather seal using a smaller router where application allows. They are two fluted for a clean finish and are available in groove widths of 2mm, 2.5mm, 2.7mm and 3mm. The grooves can be positioned in the bottom of a rebate, and are bearing guided to give a 7mm deep groove. Other bearings are available for different groove depths.

£41.71

CONTACT: Trend
WEB: www.trend-uk.com

MIRKA PROS650CV

Mirka Power Tools have expanded their range of advanced sanding and polishing machines with the launch of this pneumatic random orbital sander, packed with clever features and much attention to detail. It has a 5mm orbit and has been specially developed to produce maximum dust extraction thanks to a wide suction outlet in the machine housing. It is ergonomically designed for comfort and ease of use, and also features a 'brake seal' which makes the backing pad oscillate rather than free spin when holding the machine in the air; this eliminates the possibility of causing deep marks in the surface when first making contact with the workpiece. The brake seal also immediately brakes the rotation speed of the backing pack as soon as the tool is removed from the work, and contributes to the dust extraction by minimising the internal suction leakage. The backing pad's central air inlet results in improved air flow. This clever piece of kit is an innovative and extremely useful addition to Mirka's sterling range.

£353.52

CONTACT: Mirka
WEB: www.mirka.com

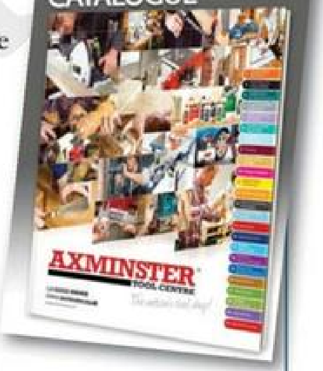
NEW AXMINSTER Tool Centre catalogue

Axminster Tool Centre's free 2013 catalogue offers the largest range of tools, machinery, accessories and consumables in the UK and is an absolute must-have for all tool and machinery users.

The 2013 full colour catalogue has over 1,600 new lines and a fantastic selection of over 11,000 product lines to choose from. It brings together quality brands and offers all the information you need to decide on the right product for you and there are many price reductions.

There are now three categories: hobby, trade and industrial – an explanation and colour coding for each of these is given in detail in the catalogue.

FREE



CONTACT: Axminster Tool Centre
TEL: 03332 406 406
WEB: www.axminster.co.uk

FROGTAPE Delicate Surface masking tape

GIVE AWAY!

We have 15 rolls of this wonderful tape, made specifically for use on wallpapered, freshly painted and newly plastered walls and other delicate surfaces. The tape is specially treated to react with emulsion paint to form a micro-barrier that seals the edges of the tape and creates a block to prevent paint from seeping underneath. The result is very sharp paint lines and less time spent on touch-ups. The distinctive bright yellow tape ensures you can easily see the areas you're masking, unlike traditional beige masking tapes that blend into the background when using neutral paint colours. The rolls up for grabs contain 41.1m of 24mm wide tape.

How to enter

Send your details on a postcard with the title 'FrogTape Giveaway' to WPP Reader Giveaway, 86 High Street, Lewes, East Sussex, BN7 1XN. The closing date for the competition is 21 March, 2013.

The competitions are open to UK residents only. Only completed entries received by the closing date will be eligible. No entries received after that date will be considered. No cash alternatives will be offered. The judges' decision is final and no correspondence can be entered into. The winner will be expected to be in possession of a copy of this issue of *Woodworking Plans & Projects* magazine. One entry per household. Employees of GMC Publications, their associated companies and families are not eligible to enter. By entering the competition, winners agree to their names being used in future marketing by GMC Publications, unless you mark your entry otherwise.

VERITAS Carver's Knife

This versatile knife has an oval handle for a comfortable fit and fine grooves for a good grip in your hand. Designed to use standard disposable scalpel blades, it comes with 12 razor-sharp high-carbon blades that are easy to hone for repeated use. Featuring a solid brass collet on an anodised aluminium body, blade change is quick and easy and blade orientation is always ideal, in line with the major axis of the body. The magnetic end cap is removable to store up to six blades in the handle, and keeps blades from rattling around inside. The Veritas Carver's Knife measures around 150mm long and is made in Canada.

£27.80

CONTACT: BriMarc
TEL: 03332 406 967
WEB: www.brimarc.com

STANLEY FATMAX TR75 6-in-1 Stapler

The TR75 fires six different staple patterns including round crown cable tacks, light duty staples, heavy duty staples, brad nails with heads, brad nails without heads and fine wire. The staple window will show you when it's time to refill and the bottom loading captive staple loader is so quick and easy to fill that the TR75 won't slow you down.

In store, the TR75 comes with a supply of staples to get you started and the 'try me' packaging allows you to test out the trigger before you buy. The ergonomically designed, bi-material handle ensures that the grip is always comfortable and the anti-jam, easy squeeze trigger has a low angle handle for easy actuation.

£39.54

CONTACT: Stanley
WEB: www.stanleytools.co.uk

MAKITA Impact Gold torsion bits

This new range of torsion screwdriver bits are designed for use with Makita's impact drivers to withstand the huge turning power of such models as the BTW147 cordless impact driver, which generates an amazing 170Nm of torque. The Makita 11-piece B-28597 set provides three Positive bits, three Phillips bits, four Torx screw bits and a special torsion bit holder. The shaped shanks are designed to carry the impact shock loads generated at the tip interface with the screw head further down than the head, thus reducing the risk of the bit faces shearing off, meaning less chance of breakage and a longer bit life. Using the holder in the set rather than fitting the screw bit directly into your impact driver shuck can achieve 15 times longer use. A really useful driver bit set and a sound long-term investment.

CONTACT: Makita
TEL: 01908 211678
WEB: www.makitauk.com

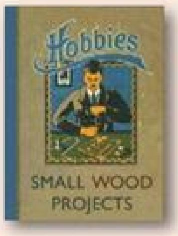
MASCOT Tombos boiler suit

The Mascot Tombos boiler suit, from the Safe Arctic range, comes in fluorescent orange or yellow with vertical and horizontal reflective tapes, including on the shoulders to ensure visibility even from above. It is breathable, windproof and waterproof, and the polyester outer is lined with Mascot's own waterproof laminate 'Mascotex' which assures 100% waterproof protection. It is certified to EN 471 class 3/2, EN 343 class 3/2 and EN 342 class 3/2; which in other words means it is breathable, windproof and waterproof. There are numerous inner and outer pockets plus a detachable lined hood, and the zip and storm flap on the legs allow the wearer to remove footwear more easily. A warm, protective and hi-vis piece of serious workwear, the Mascot Tombos is ideal for working on site, and fully equipped to stand up to the many somewhat unpredictable weather conditions here in the UK.

CONTACT: Mascot
WEB: www.mascot.dk

BOOK & DVD REVIEWS

Hobbies Small Wood Projects



This charming facsimile collection of 'splendid projects for industrious chaps' brings back into print a host of old articles originally published in the popular *Hobbies* magazines between 1920 and 1964. Intended for reading pleasure rather than for practical use, this 190-page hardback is packed with humorous nostalgia, with projects including novel items such as cigarette servers, an elaborate mechanical dustbin opener and a classic tumbling clown-and-ladder toy, as well as more practical items of furniture and home improvement advice. With all the original illustrations, adverts and text, this is a smirk-inducing relic of an innocent time gone by.

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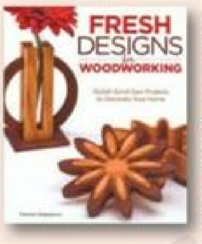
Fresh Designs for Woodworking



by Thomas Haapapuro

A new scrollsawing book which outlines a variety of stylish projects for the home in great detail, advancing through projects and techniques for the beginner, intermediate and finally advanced scrollsawer. With wall art, boxes, vases, picture frames and even business card holders, this handy book has some inspirational projects and masses of technical advice; a great introduction to the scrollsaw; though designs may date, the techniques will always be useful. Published on 14 March, 2013.

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Carpenters, electricians, plumbers, installers, builders; everyone needs to cut big holes and for big holes the Lenox Big Daddy Hole Saw Kit does just that!

PHOTOGRAPHS BY GMC/ANTHONY BAILEY

Lenox are – surprise, surprise – yet another American tool company with the right answers for craftsmen's problems. Lenox specialise in toothed cutting solutions i.e. bandsaw blades, hacksaws and blades and power tool cutters, blades and drills.

They have no less than 15 different holesaw kits in the Lenox range, many of them specially for electricians or plumbers, others for general use. The Big Daddy Kit contains nearly all the range, but by carefully selecting the kit you want it will help keep the cost down and you aren't carting sizes you are never going to need.

Each bi-metal holesaw has similar sized 'set' teeth with a neat flush weld on the side where the metal is joined. There are release holes on the sides to prise the waste disc free. The diameters range from a tiny 19mm up to a whopping 121mm with plenty of options in between allowing you to install various pipes etc while minimising damage to surrounding structures. With three arbors including two 'Snap-Back' type and a couple of spare pilot drills all in a very tough blow mould case you're equipped to go anywhere, anytime. Just fit an alarm to the case though, as the set is modestly priced at £592.26 inc VAT! This is the most expensive option; individual LENOX T2 hole saws range from £9.82 inc VAT to £162.25 inc VAT and go from 14mm to 210mm dia. However, no one is going to pay the full manufacturer's price; shop around, there are good deals to be had. ■

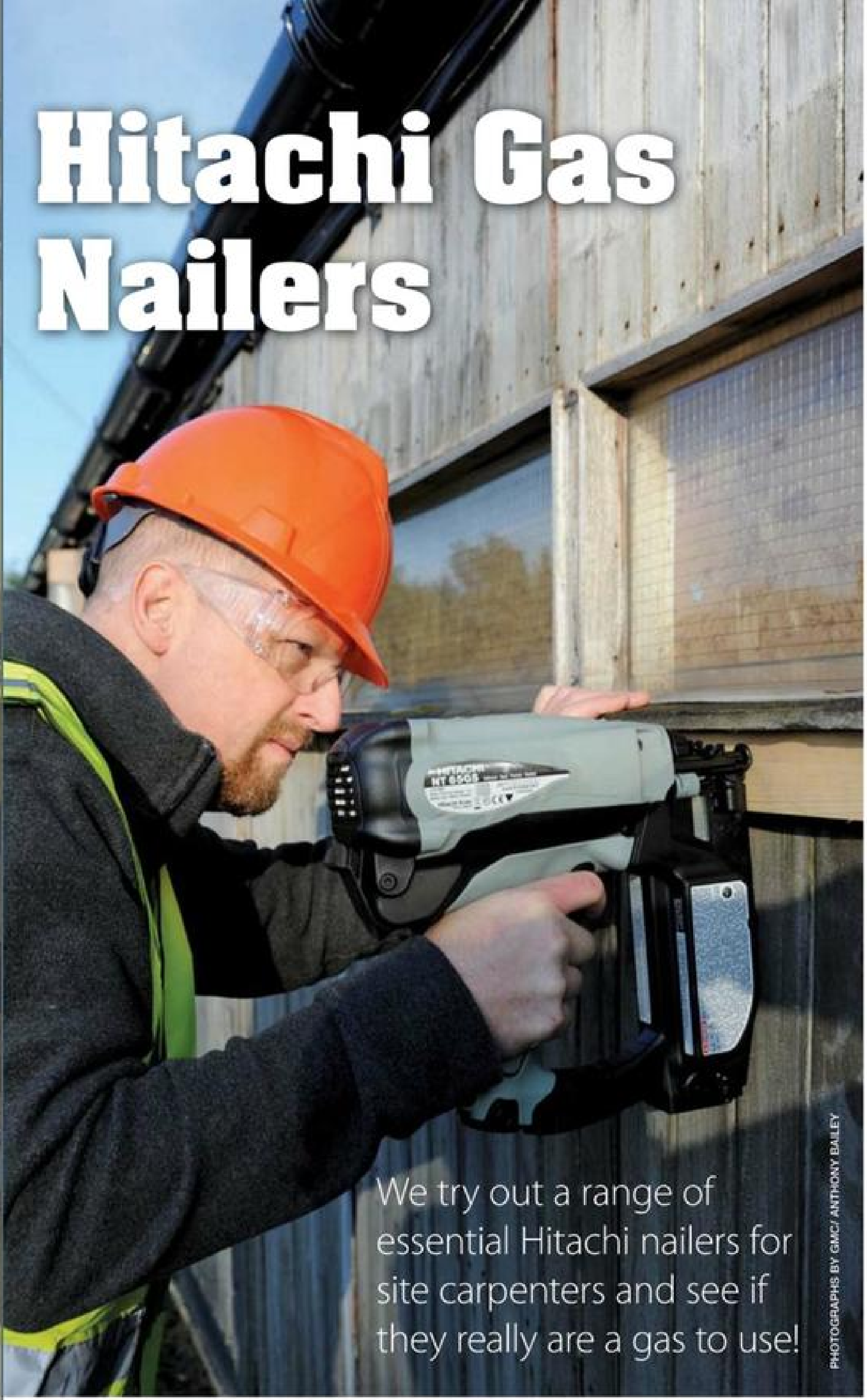
WHERE TO BUY

TEL: 01543 447 000

WEB: www.lenoxtools.eu

LENOX

Hitachi Gas Nailers



We try out a range of essential Hitachi nailers for site carpenters and see if they really are a gas to use!

PHOTOGRAPHS BY GMC/ ANTHONY BAILEY

Whether you work on site or in a construction environment without compressed air on tap, for productivity, speed and operating comfort then a cordless gas nailer is 'de rigueur'. There are plenty of tradesmen who are still using an Estwing and a pouch full of wire nails when a gas nailer would do a much better job quicker. In common with many other manufacturers Hitachi have a comprehensive range to suit all needs. They range from the NC40G when you have challenging jobs that need timber rails fastened down to concrete through first-fix framing work in either discreet clipped head nail or round head versions and then finishing off with second-fix finish nailers in angled or straight body versions to suit access situations.

Hitachi supply a complete range of collated – strip – nails, and fuel cells – gas cartridges – with each consumables pack containing both, so you know you are ready to go when you collect your consumables from your local fixings dealer.

For anyone not used to these high tech tools, the principle is simple but the practice is little more involved. A fairly small battery pack provides the ignition for gas injected into a cylinder creating a small detonation that fires a piston which punches a nail into the timber. A small motor, fan and air filter are part of the operating system. The internal nailer mechanism is quite sophisticated and tough in construction but needs regular maintenance, a clear

Hitachi can supply a wide range of consumables

Cladding a frame is a very quick operation with this nailer

Pull the catch back to engage with the nail ribbon

One bolt access to the filter and top of the mechanism

THE NUMBERS

NC40G Cordless Gas Concrete Nailer

FEATURES

Lightweight compact design
2 x 1.4Ah batteries and 60 minute charger
High driving power of 80J
Up to 1,200 nails per fuel cell
Dry firing lockout
Easy access fuel cell chamber
Easy to clean
Standard Accessories: 2 x 7.2V 1.4Ah batteries, 60 minute charger, safety glasses, hex wrench, oil and carrying case
Price: £560 (RRP Inc VAT)

NR90GC2 Cordless Gas Framing Nailer – Clipped head nails

FEATURES

Lightweight, well balanced design
Two-action nail feed; simply drop in the nails and pull back the feeder
2 x 1.4Ah batteries and 60 minute charger eliminates downtime
Quick load rear access magazine
Easy access fuel cell chamber
Foldaway hook fits over joists for greater convenience
High visibility magazine
Standard Accessories: 2 x 7.2V 1.4Ah batteries, 60 minute charger, safety glasses, 4mm hex wrench, oil, carrying case
Price: £359 (RPP Inc VAT)

NR90GR2 Cordless Gas Framing Nailer – Round head nails

FEATURES

Lightweight, well balanced design
2 x 1.4Ah batteries and 60 minute charger eliminates downtime
Up to 1,000 nails per fuel cell
Fold away hook fits over joists for greater convenience
High visibility magazine
Easy access fuel cell chamber
Quick load magazine
Standard Accessories: 2 x 7.2V batteries, 60 minute charger, safety glasses, 4mm hex wrench
Price: £359 (RRP Inc VAT)

NT65GB Cordless Gas Finish Nailer – Angled nails

FEATURES

Lightweight, compact design
2 x 1.5Ah Li-Ion batteries and 60 minute charger
Up to 1,200 nails per fuel cell
Tool-free depth adjustment
Tool-free jam clearance
Dry firing lockout
'No mark' nose cap included
Please note that this tool is not eligible for an extended warranty
Standard Accessories: 2 x 3.6V 1.5Ah batteries, UC3SML 60 minute charger, safety glasses, 2 hex wrenches, oil, nose cap and carrying case
Price: £359 (RRP Inc VAT)

NT65GS Cordless Gas Finish Nailer – Straight nails

FEATURES

2 x 1.5Ah Li-Ion batteries and 60 minute charger
Up to 1,200 nails per fuel cell
Tool-free depth adjustment
Tool-free jam clearance
Handy belt hook
'No mark' nose cap included
Please note that this tool is not eligible for an extended warranty
Standard Accessories: 2 x 3.6V 1.5Ah batteries, UC3SML 60 minute charger, safety glasses, 2 hex wrenches, oil, nose cap and carrying case
Price: £359 (RRP Inc VAT)

WHERE TO BUY

www.hitachi-powertools.co.uk

HITACHI

instruction sheet with photographs shows how to disassemble and reassemble, clean and lubricate the tool. A troubleshooting list also shows how to use the each nailer correctly and to deal with problems like nails not bedding in properly or stoppages. It also warns about not using in low temperatures i.e. below 0ºC when the fuel won't gasify.

Each tool comes in a large tough blow mould case with two batteries, a charger, lube oil, instructions and eye protection. Ear defenders would be sensible too, especially in busy working environments.

Safety is clearly an issue and Hitachi point out all the obvious hazard potentials; these machines are not toys and are capable of considerable damage if misused. Building sites often get quite crowded at second-fix stage when mixed trades are all working to a handover deadline so you have a right to expect a clear workspace if you are using a gas nailer and to avoid situations such as 'double firing', i.e. two operators, one either side of a stud wall as an example.

Having said all that these tools are capable of a very high work rate so long as you allow the gas piston to reset and recharge with gas. Time is money and conventional means are tiring so adopting these nailers makes good sense with a fast return on your investment. ■

Nailing into concrete

My Working Day

Alasdair Craig

Simon Frost meets a talented carver with skills aplenty

Alasdair ready for a day's work

Inset: This roadside bear makes Alasdair's presence known

PHOTOGRAPHS BY GMC/ANTHONY BAILEY

Alasdair Craig is a diligent craftsman for whom time is a precious thing. His principal profession is as a chainsaw carver, sculpting artistic forms often from yew *(Taxus baccata)*, elm *(Ulmus procera)* or ash *(Fraxinus excelsior)*. He has carved in wood for several years, but in the last two has turned his focus to chainsaw sculpture after completing his CS30 & 31 courses – his work now is mostly created using the chainsaw and chisels. Alasdair works at his rented farmland site for five or six days a week, and frequently takes his work to craft shows at the weekends to make sales and get commissions – as anyone who has been self-employed will relate, time off is a rare luxury!

He is no newcomer to craftsmanship, and as well as enjoying painting, drawing and writing, Alasdair is an award-winning goldsmith, having completed a five-year apprenticeship and being awarded the 'Outstanding Practical Learner' award from the Edge Foundation; Alasdair still works as the sole diamond setter for a nearby jewellers several hours a week.

As well as ongoing sculptural work, he is currently working on a commission to make and install a carved wooden sink, which he'll treat with polyethylene glycol to replace the wood's water content for stability.

Alasdair takes a keen interest in art, and cites Brighton-based artist Ashley Cooper as a main artistic influence – his 'Ashley Owls', for example, are based directly on one of his paintings.

Some of Alasdair's work, ready to take to the shows

Contact

Alasdair Craig Wood Carving,
More House Farm,
Lunce's Hill, Wivelsfield,
East Sussex, RH17 7RE

EMAIL: alasdair.craig@hotmail.co.uk
WEB: www.sussexchainsaw.com

Alasdair's Golden Rule

"Keep experimenting; it's easy to keep doing the same old stuff and put your outrageous ideas on hold, but it's important not to forget them completely, as they help you to develop your own style and keep thinking of what is possible."

Likes

"I like to see people enjoying what I make."

Dislikes

"Getting kickback from the chainsaw is never a pleasant experience!"

A large carved skull, the sort of work where the chainsaw is a vital tool

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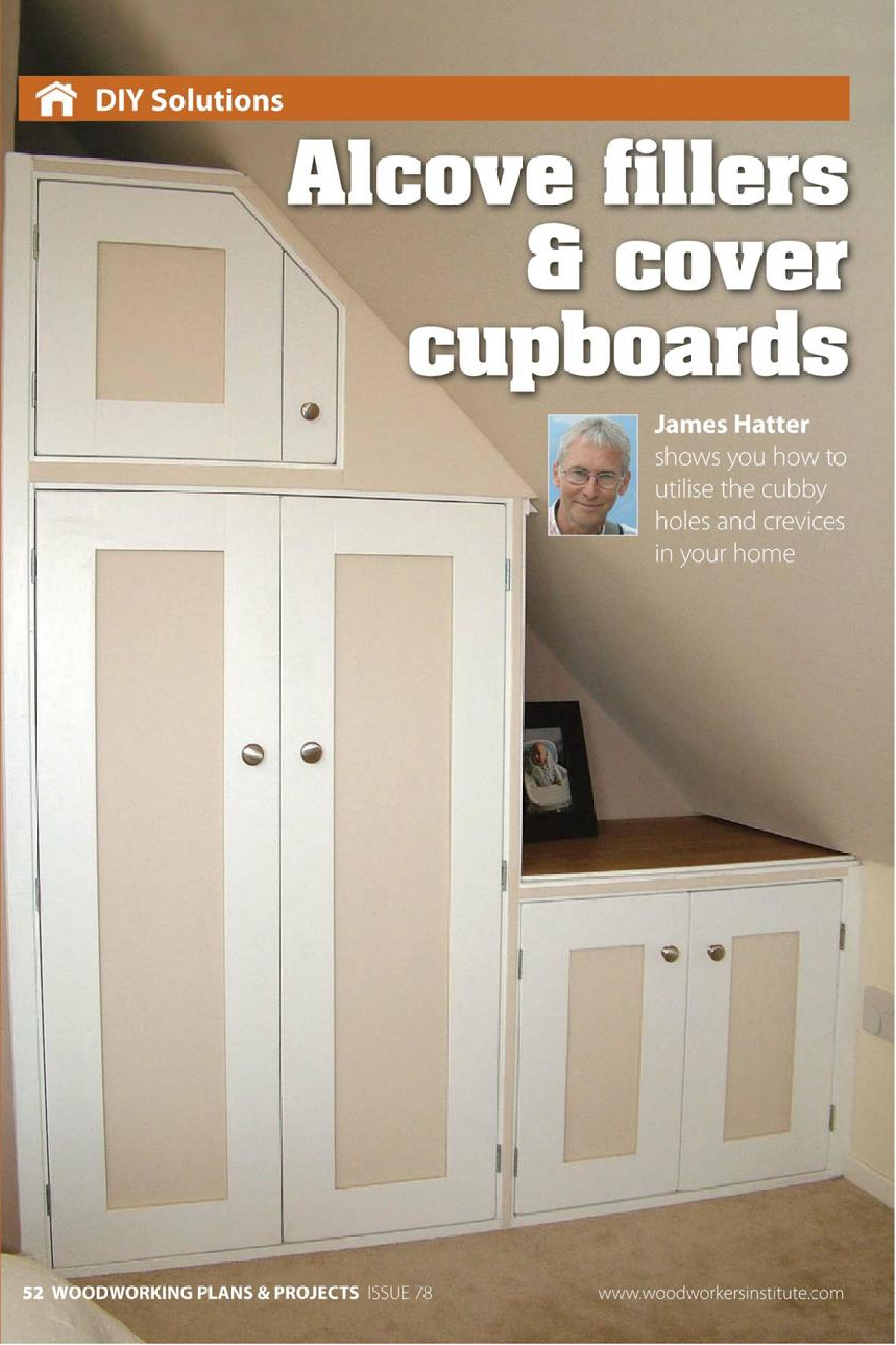


Alcove fillers & cover cupboards

James Hatter shows you how to utilise the cubby holes and crevices in your home

PHOTOGRAPHS BY JAMES HATTER

This article looks at making use of the spaces in your home, and the approach that can be used to construct suitable cupboards. One very useful area is an alcove, or an area under the stairs. These provide an easy solution as all they need is a cupboard front, and perhaps one side, attached to the surrounding walls. Shelves and hangers can be included.

Design considerations

Decide what to use the space for; a wardrobe will need a hanging rod with space beneath to accommodate clothing, plus shelves. To store specific items, take into account their size and considerations such as avoiding heat or damp. With this in mind look for suitable areas to use. An alcove can provide a quick, easy storage area. Cover cupboards can be used to contain items best concealed such as utility meters and boilers.

Design and construction

Take accurate measurements of your chosen area, including angles where appropriate. Make a sketch, then a scale drawing, then design a suitable frame that will support doors for access, taking into account shelving requirements. The size of timber used for the frame will depend on the overall size of the required frame, the loading and the support method. The examples shown used either 33 x 33mm or 44 x 44mm pine (*Pinus spp.*). When attaching to a wall use appropriate wall fixings. For brick or block walls, standard nylon wall plugs are suitable, for stud walls use expanding wall fixing, or try to arrange the fixings into the wall studs. Take care when drilling into walls to ensure that you do not damage any services that may be present. Use a metal detector to scan the proposed area to ensure that it is safe to drill; another risk is hidden plastic water pipes that will not be detected by a metal detector, but may be by a stud detector. In all cases, examine the wall above and below where you want to drill. If there is a power socket, joining cables can be horizontal or vertical about that socket, or another direction, if a cable has been installed not observing Regulations.

Wardrobes require a hanging rail, well supported, and at a height from the floor. The height is dependent upon the length of the clothes to be

1 A perfect location for a small wardrobe

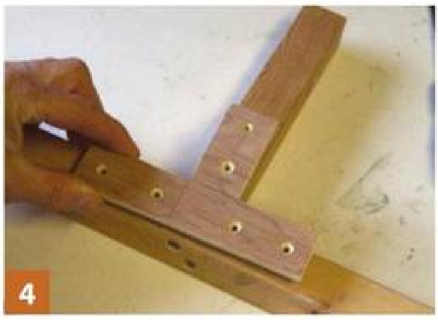
stored. A suitable height for adult use is 1,580mm but look at the clothes you are likely to store to get a better idea of exact measurements. Also take into account the required depth, which normally needs to be about 580mm. If an alcove is not deep enough, the frame can be brought forward by spacers. Shelves can be included, supported by the frame, and battens attached to the walls.

After taking accurate measurements of the area, including how plumb the walls are, the frame can be designed. It needs to be strong enough to take the doors, shelf, and hanger contents. When the frame is attached to the surrounding walls it will have added strength and stability, so the joints generally can be simple screw and adhesive type, with perhaps a backing plate to add support to cross timbers. Another effective join is a metal cross dowel and a joint connection screw; these are often used in flat-pack furniture and kitchen unit assembly. To ease fitting make the frame about 5mm smaller all around and use packing pieces to fill the gaps. These will be covered by the panelling, and the join to the walls can have a flexible sealant to form a smooth join.

A simple and effective way of making small and medium sized panel doors is to use MDF. This consists of cutting rails and stiles using 12mm MDF. These are biscuit joined together to form a frame. The frame is then given a backing of 6mm MDF; the result is an 18mm thick door. The door is made slightly larger than required, then after assembly it is trimmed to fit. It is best to use water resistant MDF because it keeps cleaner edges when machined than standard grades. For larger door requirements consider other methods of making the door, for example a pine inner frame and clad both sides with 6mm plywood, alternatively consider using commercially made interior doors.

2 The shelf and hanging rail were the first part to install

3 Screw and adhesive joints are adequate



4 A plywood T-piece for added strength

ALCOVE WARDROBE

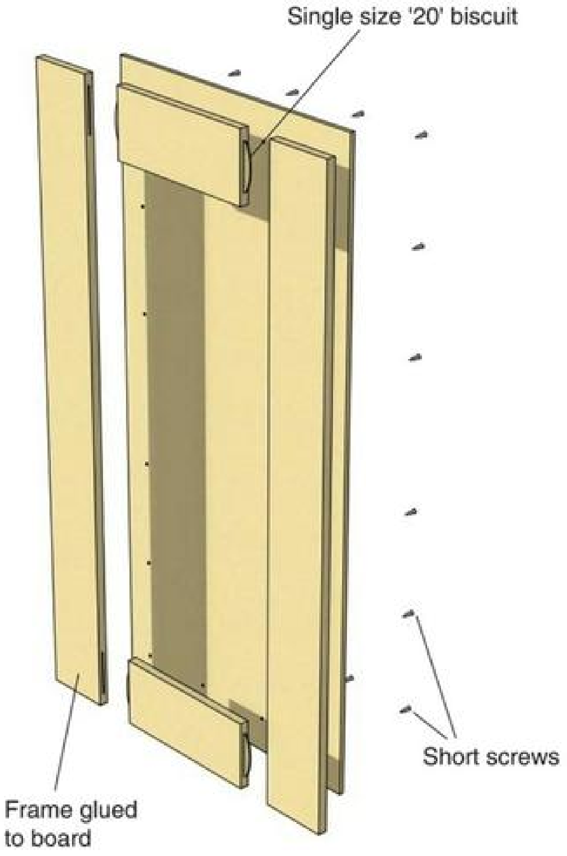
1 Measurements and angles were obtained, then a frame designed to give access to the intended contents.

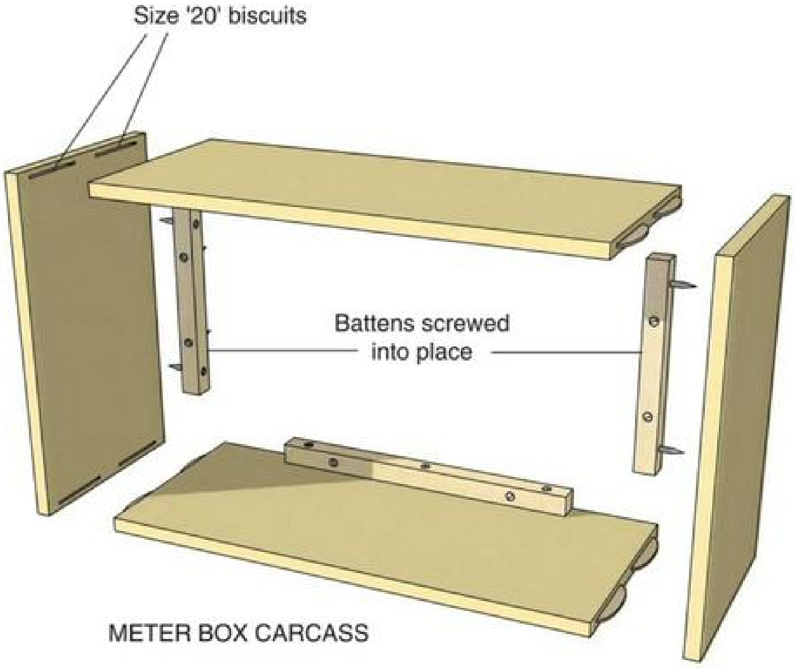
2 First the alcove was given a single shelf, and a hanging rail. The plan was to cover this, with access to the contents, and get additional storage.

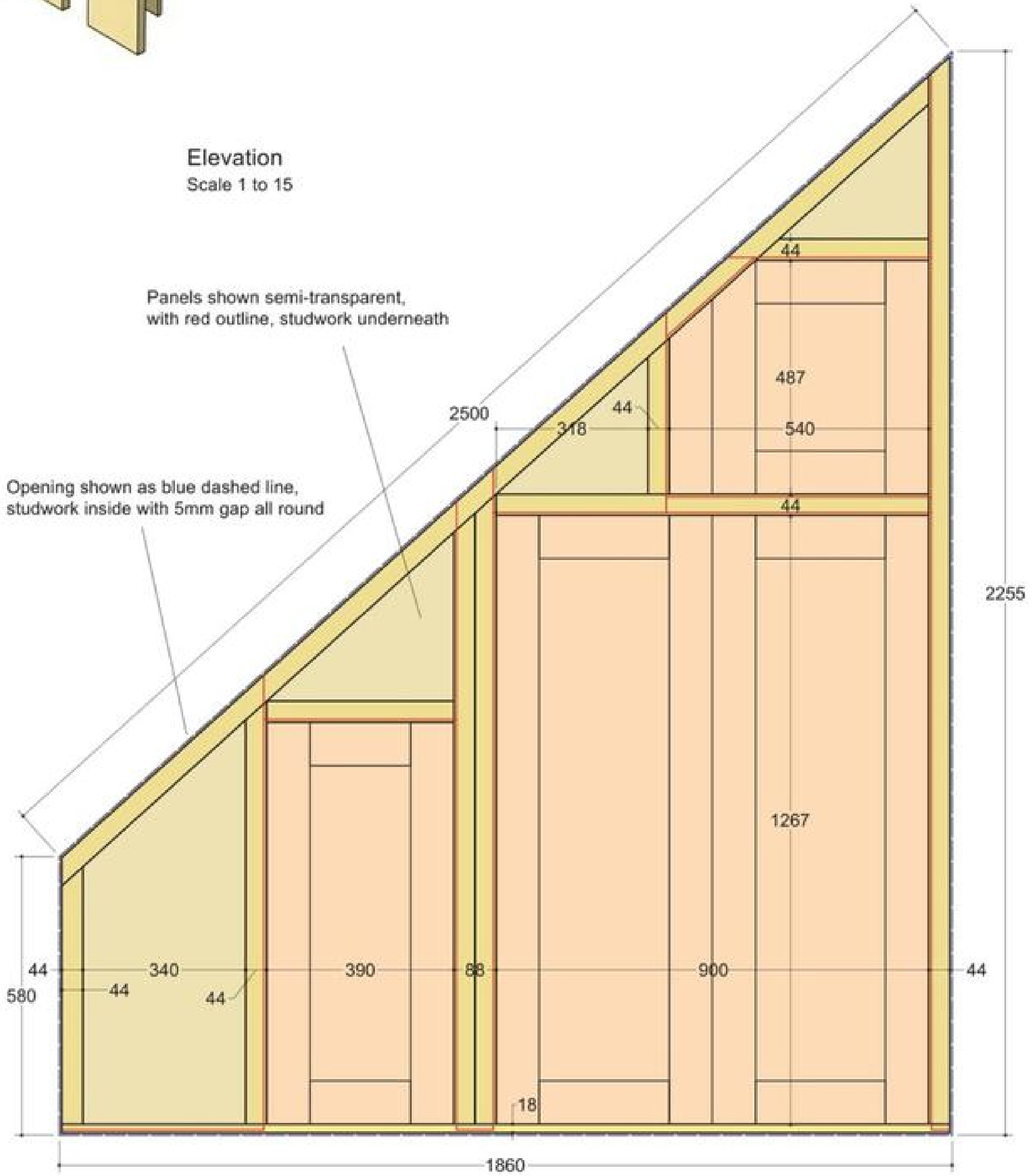
3 The frame joints are mainly simple screw and adhesive type. This is normally adequate, especially when panels are added to the frame, or the frame is tied to the wall.

4 Where added strength is required a plywood T-piece can be cut using a bandsaw or jigsaw. This example frame used 33 x 33mm pine.

WorldMags


Single size '20' biscuit
Short screws
Frame glued to board


Size '20' biscuits
Battens screwed into place
METER BOX CARCASS


Elevation
Scale 1 to 15
Panels shown semi-transparent, with red outline, studwork underneath
Opening shown as blue dashed line, studwork inside with 5mm gap all round
2500
2255
1860
580
44
340
390
88
900
18
487
540
318
1267

5 Screw the T-piece to the frame to reinforce the adhesive joint

6 To further improve the joint of the frame members use a cross dowel

7 Join the two pieces using the joint connection screw through the dowel

5 Screw the T-piece to the frame members with added adhesive. This method can be effectively applied to other junction joins.

6 A further method of joining the frame members is to use a cross dowel. Drill a 10mm hole for the dowel to fit in, and drill a 6mm hole to meet the dowel.

7 Drill 6mm hole in the joining frame member, and counter bore with a 15mm hole to sink the cross screw head. Then join the two pieces together using the joint connection screw through into the dowel.

8 With the frame made; the frame is fitted into position, attachment screw positions marked, the wall drilled to take wall plugs. With the frame in position it is attached using suitable length screws.

9 Panels of 6mm MDF are cut to cover the areas that will not have doors. Accurately measure the openings to determine the size of doors required.

10 Simple panel doors can be made using MDF. The rails and stiles use 12mm MDF, while the backing is 6mm MDF, making an 18mm thick door. The rails and stiles have matching size 20 jointing biscuit slots cut.

11 Join the stiles to the rails, using size 20 biscuits and adhesive. Cramp the assembly and allow the adhesive to dry.

12 Coat one side of the frame with adhesive, and coat the backing panel with adhesive along the part that will be in its outer surface.

8 The frame is fitted into position

9 MDF panels cover the areas which do not have doors

10 Cutting size 20 biscuit slots to join the rails and stiles

11 Joining the stiles and rails using biscuits and adhesive

12 The frame is then coated with adhesive

Placing the backing panel onto the glued frame

Reinforce the join with screws

Painting the door after sealing with a weak PVA solution

Cranked hinges give a secure fitting when working with MDF

Handles are added and the doors held shut with magnetic catches

One completed alcove filling project!

The same methods were used to create this under-stairs storage

13 Place the backing panel onto the frame.

14 Screw through the backing panel into the frame. When the adhesive has cured, trim the edges of the door to the correct size.

15 Apply a sealer to the door – a weak PVA solution is fine – and when dry, lightly sand then apply two coats of primer/undercoat, and once dry, a finishing coat.

A secondary door prevents the need to have large main doors

16 Attach hinges to the doors; two for small doors and three for the longer doors. The best type is cranked hinges, to give the most secure fitting in MDF.

17 Fit the doors and attach a suitable knob or handle. Use magnetic catches at the top and bottom to hold the door closed.

18 The completed wardrobe and attached cupboard. The added stile to the top door is included to improve symmetry.

UNDER-STAIRS CUPBOARDS

19 The same methods described are used to make these under-stairs cupboards. With this example a thicker 44 x 44mm pine was used for the frame, and the method illustrated in the drawings.

20 This additional door gives further access, avoiding the need to have large main doors.

The same methods used as part of this loft conversion

Gas and electric meters aren't especially pleasing to the eye

LOFT CONVERSION DOORS

21 The same method of making the doors is used to gain access to an area in this loft conversion.

METER-COVERING CUPBOARD

22 There are often features in the home that require good access but are best hidden from general view. This example shows a domestic electric meter and consumer unit.

23 Make a box frame that will cover the area to be concealed. Attach either to the wall, or as in this case, the mounting board.

24 Make the doors in the same way as previously shown, and attach them to the front of the surround frame.

25 The completed cover cupboard – much better!

26 The support plate used in under-stairs cupboard.

For cover cupboards, measure the area and depth of the item(s) to be concealed. Also check how the cover cupboard will be attached. The usual form for a cover cupboard is a box frame made from plywood or MDF, with the sides biscuit jointed together, and doors hung to give good access. The depth of the sides of the box frame will provide adequate clearance for the items being covered.

Finishing

The choice of finishes is vast, and usually a personal choice. The examples used in this article had a diluted PVA solution applied after initial sanding to seal the MDF. When dry, the surfaces were sanded with a 400 grit abrasive paper. Next, two coats of a water-based primer/undercoat were applied, followed by a further fine sanding. For the top coat, two coats of water-based satin paint were applied. The finishes were applied with an acrylic bristle brush, and for larger surfaces a small 100mm roller was used. This method normally allows all of the paintwork to be completed in one day. ■

Attaching the box frame to the mounting board

The meter-covering cupboard with the doors added

The meter now hidden away, a great improvement!

A look at the support plate used in the under-stairs cupboard

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Elmer's tinted woodfillers

There's a time to make and then there's a time to fill... **The Editor** takes a look at Elmer's tinted woodfillers

PHOTOGRAPHS BY GMC/ANTHONY BAILEY

Elmer's products are a household name in the USA but still quite new to us in the UK. They make glues, adhesives and woodfillers. We have already tried out quite a few of their glue products and have been very impressed with them in terms of quality and usability. The range of tinted fillers are formulated using various powered materials in an acrylic water-based medium. If you visit the Elmer's website and read the data sheet you will get a better idea about the nature of the ingredients but I suggest you don't pay so much heed to the safety warnings. This is now a statutory requirement for all manufactured products, in many cases the health risk will be absolutely negligible such as with these fillers which are easy and safe to use.

The full range is supposed to be six colours but currently only four are available in the UK. They are Natural, White, Walnut and Golden Oak, in 96ml squeezable tubes.

Sanding leaves an almost invisible result

Verdict

I have used many kinds of filler over the years and they normally exist as either simple one-part or the two-part type of activated material. One-part filler can be the very fine Brummer Stopping type, ground up wood fibres in a solvent and cellulose medium or the more recent acrylic type of medium mixed with solid, powdered materials. Elmer's falls into this third category and thus makes it an easy filler to squeeze out of the tube and fill holes and cracks while reducing the amount of shrinkage in larger holes. It can be cleaned off level with a sharp chisel or sanded without difficulty. The colour matches are good too, I have found a number of jobs that I could make with quite discreet repairs. All in all, a very useful set of fillers to keep handy, certainly a mahogany colour at least would be a good addition. ■

THE NUMBERS

Price: £4.06 (RRP Inc VAT) for 96ml tube

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Clarke CCS-2	1300w	60/45mm	185/20	£64.99	£77.99
Makita 5704RK	1200w	66/46mm	190/30	£104.99	£125.99
Rage	1050w	54/35mm	185/20	£89.98	£107.98

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- 4000-11000 opm

INC 5 DISCS

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makita

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MODEL	INPUT POWER	DEPTH OF CUT	EX VAT	INC VAT
Clarke CEP1	650w	2mm	£24.99	£29.99
Clarke CON1020	1020w	3mm	£36.99	£44.39
Bosch PHO20-82	680w	2mm	£64.99	£77.99
Bosch GHO26-82	710w	2.6mm	£129.98	£155.98

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Ryobi ERT1400RV#	1400	0-55	£89.98	£107.98
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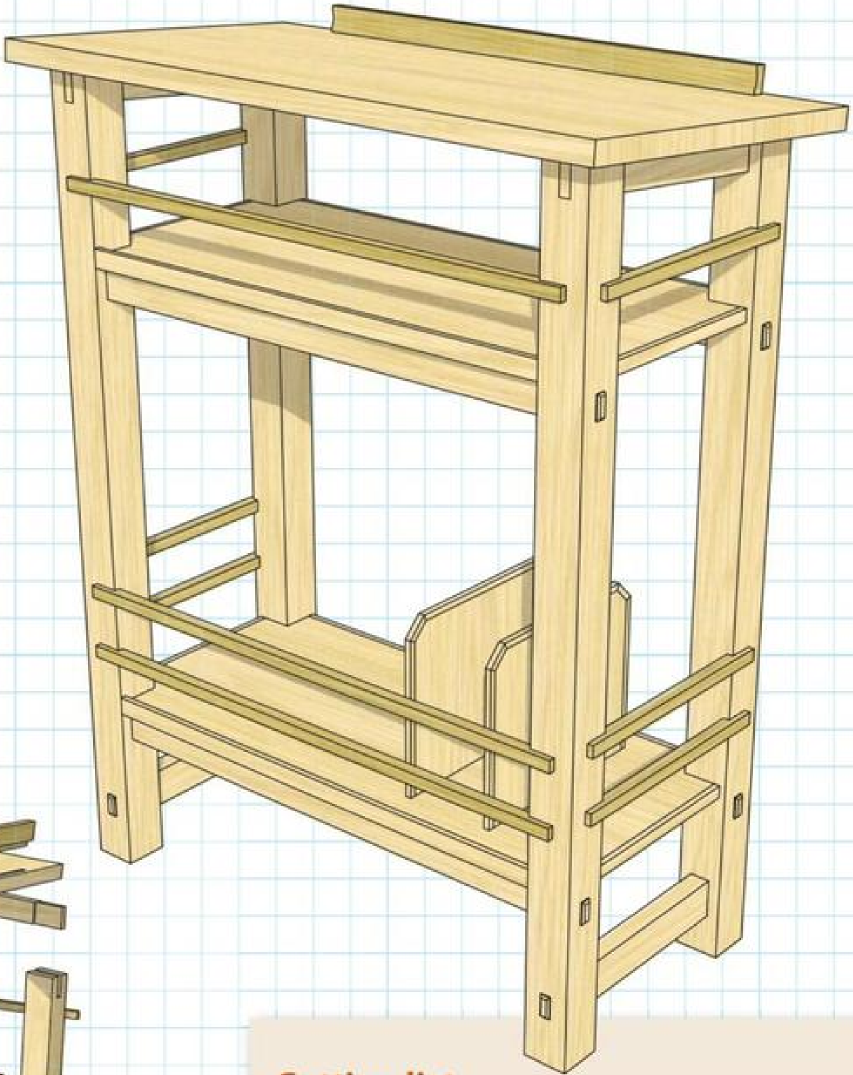
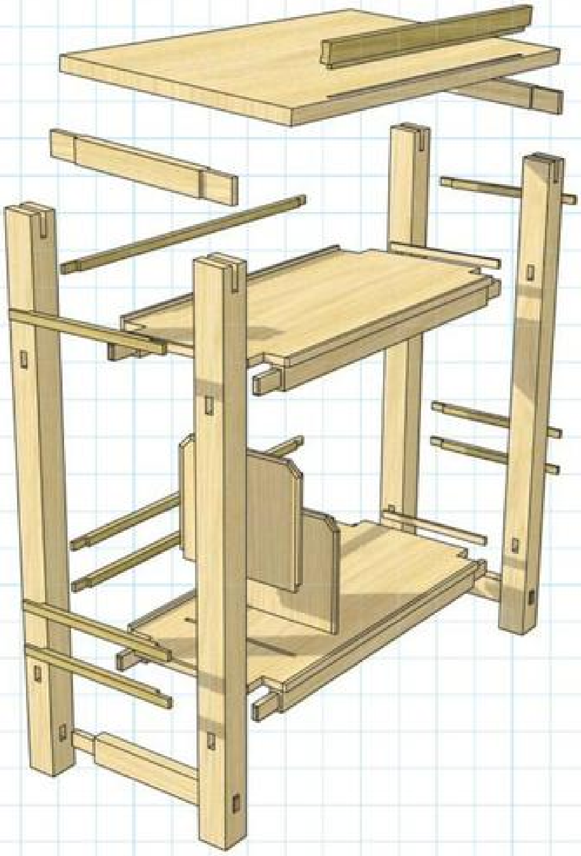
PLANS 4 YOU

Reading stand

Simon Rodway makes this reading stand, perfect for working on a *WPP* project!

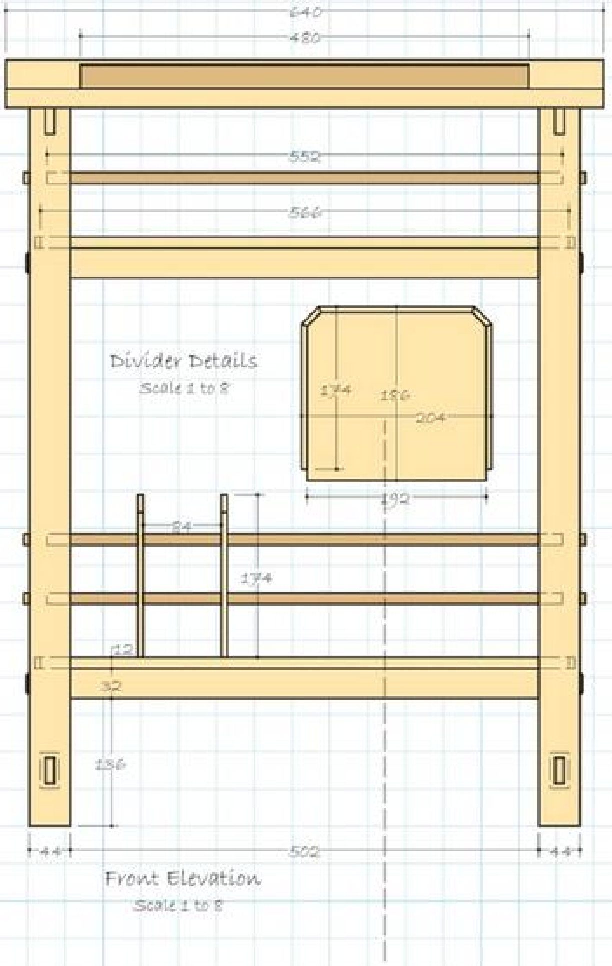
For most of us, reading is something we do either sitting or even lying down; a relaxing activity where the body is at rest and the mind can be freed to wander. It is, however, increasingly clear that we tend to spend too much of our lives sitting down, and there is a growing amount of evidence that suggests that this may be damaging our health. So a reading stand, which allows you to absorb the contents of your latest book, newspaper or magazine, and gets you up on your feet at the same time, is an unusual but sensible idea.



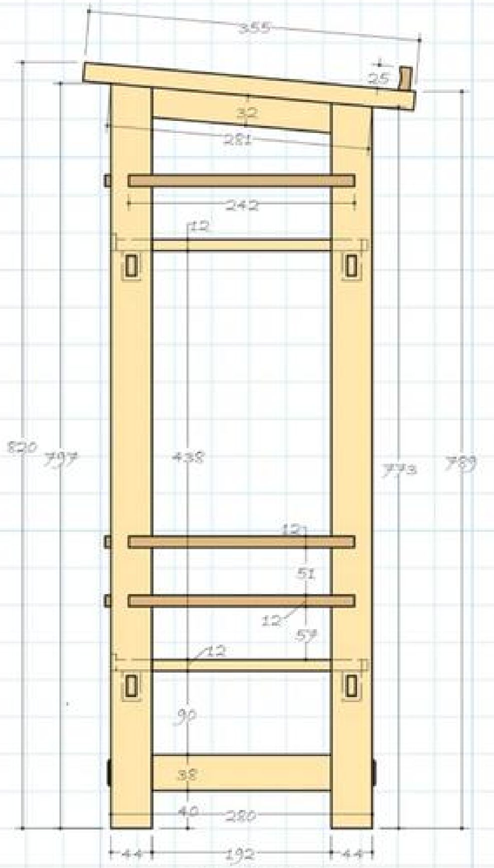


Cutting list

Top	1 @ 640 x 355 x 20mm
Book stop	1 @ 480 x 25 x 12mm
Ply tongue	1 @ 440 x 12 x 6mm
Front legs	2 @ 797 x 44 x 44mm
Back legs	2 @ 777 x 44 x 44mm
Top rails	2 @ Ex 290 x 32 x 25mm
Bottom rails	2 @ 286 x 38 x 25mm
Cross rails	4 @ 596 x 32 x 25mm
Shelves	2 @ 566 x 263 x 12mm
Back trim	2 @ 502 x 18 x 6mm
Front trim	2 @ 502 x 12 x 6mm
Side trim	4 @ 192 x 12 x 6mm
Dividers	2 @ 192 x 180 x 6mm
Side battens	6 @ 242 x 12 x 12mm
Front battens	3 @ 552 x 12 x 12mm
Divider trim to fit	



Front Elevation
Scale 1 to 8



Side Elevation
Scale 1 to 8

Construction is basically a pair of frames, angled at the top by 5º and joined by lateral rails at lower and higher levels which support the shelves. The design is influenced by Arts & Crafts furniture, particularly the chamfered through tenons, and the notched battens to the front and sides of the stand which serve to prevent books and magazines falling off. Accurate cutting of mortises and tenons are really the key to this project, as well as the angled bridle joints for the rails which join the legs at the top. You will need to match the shoulder angles to the 5º angle of the top, leaving the tenons overlength front and back, to be cut and planed flush once the frames are glued and fixed. The tenons on the bottom rails, of course, project 3-4mm through the mortises, with a small chamfer all round on the ends, and this detail is repeated on the cross or long rails.

The shelves are 12mm plywood or veneered MDF, with solid 6mm lipping on all exposed edges. I have shown the lipping along the back edges of both shelves slightly raised to form a small upstand to catch the odd bit of paper or pens. The shelves are cut out around the legs, and I suggest the measurements for the cutout are taken off the finished end frames to avoid small gaps between shelf and leg. The shelves are fixed by slot-screwing through the underside of the front and back rails up into the shelf, and the top is fixed in the same way. The lippings are glued before fitting, to allow trimming and sanding flush with the ply. Additionally, the bottom shelf has two 6mm wide slots to take the dividers, which are lipped plywood with chamfered corners. These are simply glued into the slots, which are cut to the whole thickness of the shelf.

I have shown the top as solid timber, and because of the width this will almost certainly need to be made up from several strips biscuited and glued. It is a good idea if possible to alternate the grain direction when you make up the top so that any cupping on an individual piece will be compensated for by the adjoining pieces. Once your top is completed, you will need to finish if off by adding the book stop which runs along the lower edge. This can just be a rectangular section, with a 6mm ply insert to form a tongue which fits into a slot in the top. Mark the position and length of the slot on the top and the stop using the ply insert, rout and finish the ends with a chisel. Glue the insert into the stop. It's up to you whether you glue this stop into the top, but I would leave it unglued, so that you have the option of a clear flat surface when you want it. The top is fixed to the frame in the same way as the shelves, using slotted screw holes through the underside of the top rails. Finally, glue the notched battens onto the sides and front of the frame. These could additionally be chamfered on the ends if you want to further add to the Arts & Crafts style of the piece. ■

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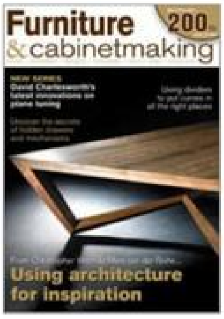

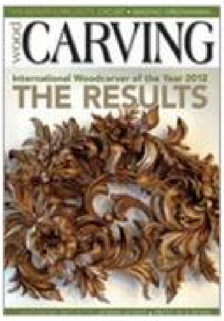

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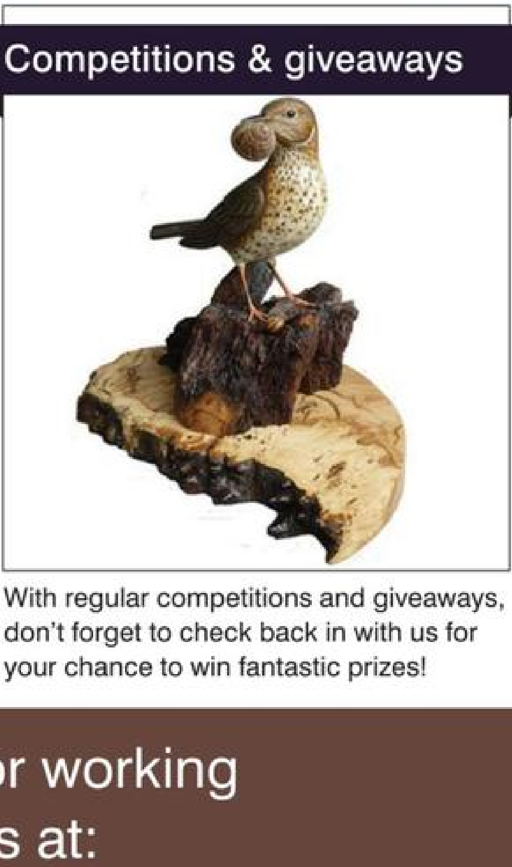

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PHOTOGRAPHS BY GMC/ANTHONY BAILEY, EXCEPT STEPS 2-9 BY PAUL BIGNELL

Carved rose

A version of the rose carving without the outer ring

Paul Bignell comes up roses with this beginners' carving project

This project came about after a member of my class finished a quite complex pierced relief of a stag in a forest, and several of the class wanted to tackle a similar, but simpler, project. Some made it as a standalone carving while some carved theirs within an outer area as a pierced carving – the rose design chosen lends itself nicely to being encircled. Some 150mm planks of hardwood I had on the shelf became an obvious candidate for the job, but any size of wood will do.

TOOLS YOU WILL NEED

Test piece

Playing around with some joinery quality plywood

Laying out your design is critical. Number the areas so that you can work in stages

Encircled rose

1 The first thing to do is transfer the design to your chosen piece of wood. At this stage you should give some thought to the carving levels, i.e. the profile, and mark the subject numerically from one to six, one being the highest point on the carving and six the lowest.

2 Cut the square board – mine was 150 x 150mm – on the bandsaw into a round. To remove the wood from between the leaves and the outer ring I drilled some 8mm entry holes and then used a jigsaw to cut away the surplus wood – a fretsaw could also be used.

3 With a 5mm 'V' tool I cut away the drawn outline…

Cut the item to shape and remove the waste wood

4 … I also used a 'V' scorping tool for some of these lines, as it lends itself to cutting nice tight turns without running away with the grain. As the tool is used like a knife this affords you a lot more control in the detailed areas.

Use a 'V' tool to mark the main areas

5 The initial leaf detail on the rose was cut away from the main petals and the surrounding ring with a variety of knives. I used several different brands of knife, but you don't need to spend a lot of money to get a good one.

Continue to define the main areas until all are marked, I used a bent and angled scorping blade

Knives allow access to tight areas and are easy to control

You now need to start creating the leaf detail

The petals need a similar treatment

A spoon gouge affords easy control on concave surfaces

Continue until the whole area has the detail and shape required

6 Using a 12mm skew chisel, I lowered the leaves to give the height of the outer rose petals.

7 I then lowered the height of the outer petals a small amount using the same tool.

8 To achieve a 'rolled' edge and the depth of the outer petals I used a 9mm spoon gouge.

9 I finished the rest of the petal with a No.3 9mm gouge. For the centre of the rose I used mainly knife cuts and the spoon gouge.

10 Apply a coat of Danish oil and some green wood stain for the leaves and the piece is finished. ■

The finished rose, after a coat of Danish oil and some green wood stain for the leaves

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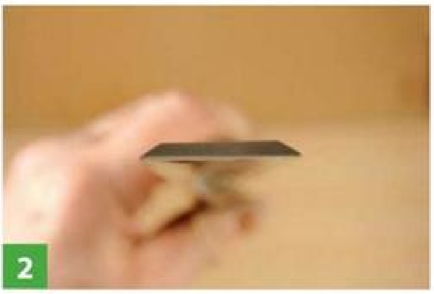
PHOTOGRAPHS BY GMC/ANTHONY BAILEY

Chisels and gouges

The Editor takes us through the various options and how to choose and maintain your chisels and gouges

If you go looking for a new set of chisels you could be forgiven for thinking they only come in sets of four or six bevel edge pattern and there are no other options. This isn't correct now, any more than it was in years gone by, but to be able to make the most discerning choice you need to visit a specialist high quality tool dealer in person, or look at manufacturers' and dealers' online websites. What we can do is show you some of the finer points of these essential hand tools. No tool kit can be without chisels but a few more of the better ones can make a real difference to your working methods. Gouges are also very useful where you need to cut on the curve and there are different types of these also.



2 **Modern chisels have a good solid steel section for plenty of strength**

1 **A standard set of bevel edge chisels**

TYPES OF CHISEL

Bevel edge

This is far and away the most common, preferred type and the most widely sold. The low bevel angle to the sides of the blade make it comfortable to hold the blade body and ideal for undercut work such as cleaning out dovetails and mortises choked with wood fibres. Once, such a slender profile might have been regarded as less strong than is ideal but modern steels are extremely tough and when looked at in end profile you can see there is plenty of blade metal for making heavy mallet-driven cuts.

3 This vintage Robert Sorby firmer chisel looks quite delicate compared to modern chisels but will still give good service

Firmer

The poor old firmer with its square sided profile has lost ground to the bevel type greatly. Hand working techniques have changed quite a lot with the advent of power tools to do most of the 'grunt work'. This has meant there isn't much advantage to using firmer chisels for a lot of activity and indeed older quite slender firmer chisels with ash (*Fraxinus excelsior*) or boxwood (*Buxus sempervirens*) handles can often be found second hand. More recently Veritas have produced some super expensive chisels with an off-square edge profile which gives strength and will clear a normal dovetail angle.

Skew bevel

The skew takes a leaf out of the woodturner's book by having an angled tip available in left- and right-hand version that can be used to cut into tight awkward corners. Not essential but handy sometimes. It is quite easy to cut yourself on these so a little care is needed handling them.

Corner

Another newer invention, the corner chisel or 'bruzze' is excellent for predictably square cut corners, especially for mortises. Handy if you use a router or slot mortiser and want square sockets.

7 The swan neck chisel is very much a levering tool, not intended to be struck

8 Note the hefty, thick blade metal on this sash mortise. If more force is needed, use a hooped 'registered' pattern instead

Paring

Paring chisels have been around for ages and are very useful for clearing and flatting housing joints which can be quite long and inaccessible to standard shorter chisels. These are really only required if you have a regular need for these, only one may be necessary.

Cranked paring

This version gets around the problem of both the handle and hands striking the carcass leading edge when paring out a housing, as the handle simply clears over the surface completely.

Swan neck

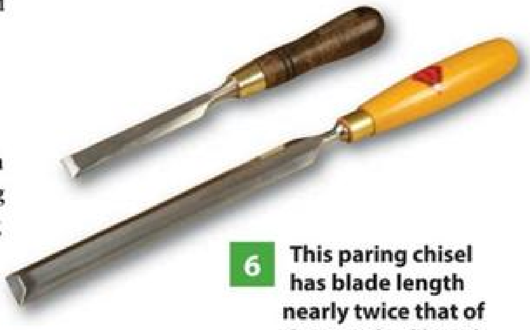
Cleaning out a deep mortise with a chisel is fairly impossible but tradesmen everywhere still do it. They would be better off with this model which is square and thick in cross section but has an unusual curved side profile designed to lever the wood fibres from the base of the mortise. If you do a lot of second fix work involving doors then this one is for you.

Sash mortise

The sash mortise is a heavy pattern originally intended for making up window sashes, as the name suggests, and has a striking hoop. Mortise chisels have a very thick square section profile designed for levering wood from the mortise, resisting the force of bending where more lightly built chisels could be damaged under the load. There are also variants referred to as 'registered' or 'framing' which also have striking hoops at the top.

4 These skew chisels need to be bought as a pair. The points are quite dangerous so care is needed

5 If you must chop exactly square sockets a corner chisel will deliver a good result



6 This paring chisel has blade length nearly twice that of the standard bevel shown behind

Site

To suit today's construction needs there are chisels created using modern design and manufacturing materials to make tools that will take a lot of abuse on site and keep sharp for longer. Brands such as IRWIN are typical exponents of this modern trend.

9 This suite of IRWIN chisels are built for toughness, the rearmost version has a rod that is visible inside, running up to the striking cap

10 Japanese chisels are typified by the short blade and hollowed back which incidentally does not get removed with constant resharpening, although it might appear so

Japanese

We could write a whole article on Japanese chisels but they tend to be expensive and require their own special care regime to keep them fit to use. They look a bit like western chisels but the body metal is slightly soft – a relative term for tool steel! – while a thin layer of really hardened steel is laminated to the body metal by hand forging. This is hot, hard difficult work but it gives a wickedly hard and sharp cutting edge if you follow the correct sharpening method using the supplied instructions.

Miscellaneous

There are other, more obscure types such as the Robert Sorby 'slick' pattern with chunky blades and long offset handles for timber framing and boatbuilding. Even standard bevel edge chisels can be had as short or long blade, chisel variety seems endless…

GOUGES

In-cannel

There are times when flat won't do because a curved surface is needed. The answer is to use a suitable gouge. These come in different radii and overall widths. You may be able to press a carving gouge into use if it has a straight blade body as these do. In-cannel – channel – means the bevel is on the inside, so the cut made at the outside edge producing waste to the inside.

Out-cannel

This version cuts on the inside edge and produces waste on the outside of the cut. Both patterns create a crisp incised shape allowing you to remove the waste away from the line neatly using a chisel.

11 You can buy a whole variety of different radii gouges, the flat ones tend to be wider in section

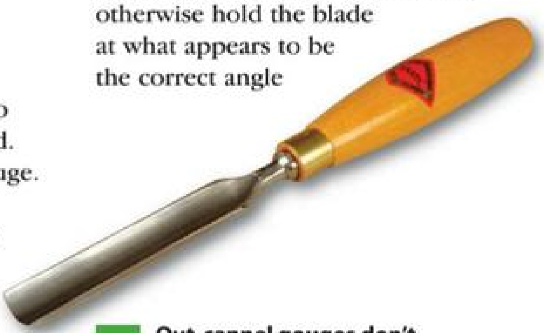
Cranked & straight paring

An extended version of the above types, with a cranked neck or straight for when you need deep access such as for forming flutes. You only need a few gouges as a rule. Experience will show what is most needed but a couple each of 'in and out' cannel gouges in both wide, larger radii and narrow, smaller radii sizes should do.

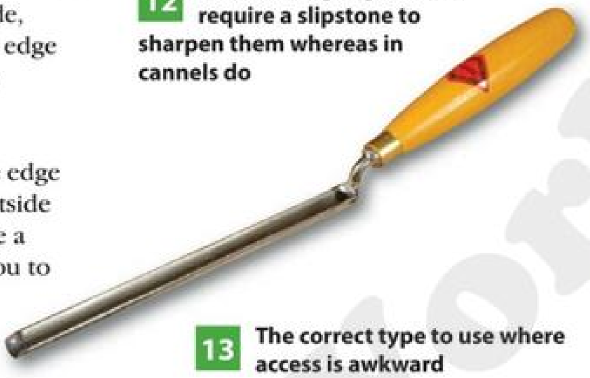
SHARPENING CHISELS

Grinding

The sharpening regime is similar to plane blades i.e. the coarse grinding angle is 25° and the honing angle is 30°. To grind a badly worn blade a wetstone grinder is ideal but most of us can't afford one. A standard dry grinder is okay but the stone needs to be in good order and you need to keep a water bath handy for cooling. If you can adjust the rest on the grinder so much the better, otherwise hold the blade at what appears to be the correct angle and check with a sliding bevel. Grind evenly across the upper face and keep dipping the blade in water for several seconds. Failure to do this will cause the blade edge to colour with the heat. By the time this happens it will be too late and the metal will have 'lost its temper', this is evident by the metal going from light straw through dark straw, blue then purple and finally a flat blue-grey colour. You



12 Out-cannel gouges don't require a slipstone to sharpen them whereas in cannels do



13 The correct type to use where access is awkward

CHISEL CONSTRUCTION

Typical chisel construction consists of a blank billet of specially formulated steel being drop forged in a blade shaped mould. The resulting shape with its surplus wings is then chopped to shape, ground to shape and heat treated. Tool steel is made to a specific hardness defined on the Rockwell scale and varies from one type to another.

Blades have either a tang and leather shock pad and ferrule or socket – bolster – with or without ferrule to fit the handle to, although IRWIN use a rod shape instead. The process is highly automated for speed and consistency. The resultant blades are then fitted with handles which can be either wood with a ferrule to prevent splitting or a very tough plastic which is moulded into place. After this it is down to you to choose which chisel type and to maintain it.

14 New chisels do not require grinding but old or heavily ones will need treatment before honing

will get a hollow grind on the bevel which may be a bit severe, sliding it up and down the wheel slightly will help flatten it a bit which will hold the strength of the edge metal. Having got a coarse grind, honing the secondary micro bevel is done with a honing guide on a sharpening stone.

Honing

The first time you use a chisel it is worth getting the back as flat as possible.

Just as I do with my planes, I start with a 600 grit diamond plate and water or lapping fluid, the latter has reduced surface tension so it sticks to the plate and won't cause any rusting. Start by flatting the the back to level it and remove any grinding burr.

Now hone the micro bevel on the top face. Standard honing guides are often marked with the correct blade projection so you can set them up with ease.

Next it's time to use a 1,000 mesh ceramic stone taking care not to score it with the narrower blades. Repeat the process as before with the diamond plate.

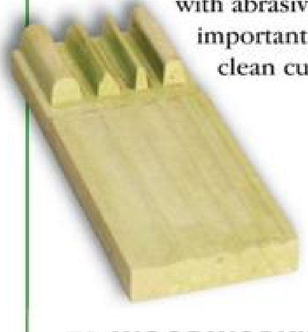
Lastly, I use a block of 'end grain' MDF all stuck together in strips, with abrasive paste to polish the cutting edge to a very fine finish.

The result is a razor sharp edge that will give the best result with the least effort.

SHARPENING GOUGES

These are a different matter because of the blade curvature. Grinding entails rolling the tool sideways against the abrasive wheel so you achieve a smooth curve. An in-cannel gouge will require a narrow round-edged grinding wheel and some care to get a good result.

Honing on internal bevels requires either a slipstone or a multi-profile waterstone. External surfaces can be honed on a flat plate or stone, again with a rolling action. Edge polishing with abrasive paste is quite important for a really clean cutting action.



This waterstone is shaped to match carving tool and gouge profiles

15 A new chisel can be surprisingly uneven when you try flatting the back

16 This chisel is nearly flat, even the edge has a slight dip to be removed

17 A honing guide is essential for obtaining a flat micro bevel at the correct angle

18 Ceramic stones give a subtler finish to the cutting edge

19 After polishing both back and micro bevel it is worth dragging the edge vertically to give a last polish to the edge

20 It is satisfying to achieve really well finished cutting edges

21 There is a knack to rolling the tool on the abrasive wheel so you get a regular curved grind

22 Slipstones and waterstones can be had in different grades; both coarse and fine stones are useful to own

Usage tips

1

2

1 Stating the obvious, chisels can be very sharp and therefore dangerous. However, if you need excessive force to chop a mortise or struggle to pare a tenon face cleanly, then it just isn't sharp enough. Refine your sharpening technique so you can get razor sharp cutting edges for cleaner easier cuts.

2 Have two sets of chisels, one for best and one for site work which is much rougher. Spend a bit more money on the best set so you can own ones to be proud of, the site set can be much more heavily built and not pretty! The best steel will retain its edge longer especially at a very shallow honing angle.

3 Unless you are chopping using a mallet or hammer, you should always have one hand guiding the blade with the other pushing the tool forward. It not only gives proper control but prevents the possibility of a user having a hand dangerously placed in front of the blade; clamp the work instead.

4 On site, chisels are always going to get clouted with a hammer, but wherever you are a mallet is far better. The conventional flat-faced mallet has a larger face area to avoid misses but will get dented with use.

5 Best of all, a round mallet should be used, the reason being that a flat hitting face can slide off the chisel handle, with a hammer this can be particularly painful and concentrated force can damage a handle. A round bronze or lignum vitae mallet head will almost certainly strike despite the curvature and won't dent easily.

6 Keep your workshop chisels in a safe rack to protect the cutting edges and any stray hands that bare edges could slash. My favourite pattern of rack has been seen before but bears repetition.

3

7 Working on site, chisel guards or sheaths or a leather tool roll are essential for safety and edge keeping. A smaller 600 grit diamond plate and lubricant is all you need for 'site sharpness' as the demands are less critical than in fine benchwork.

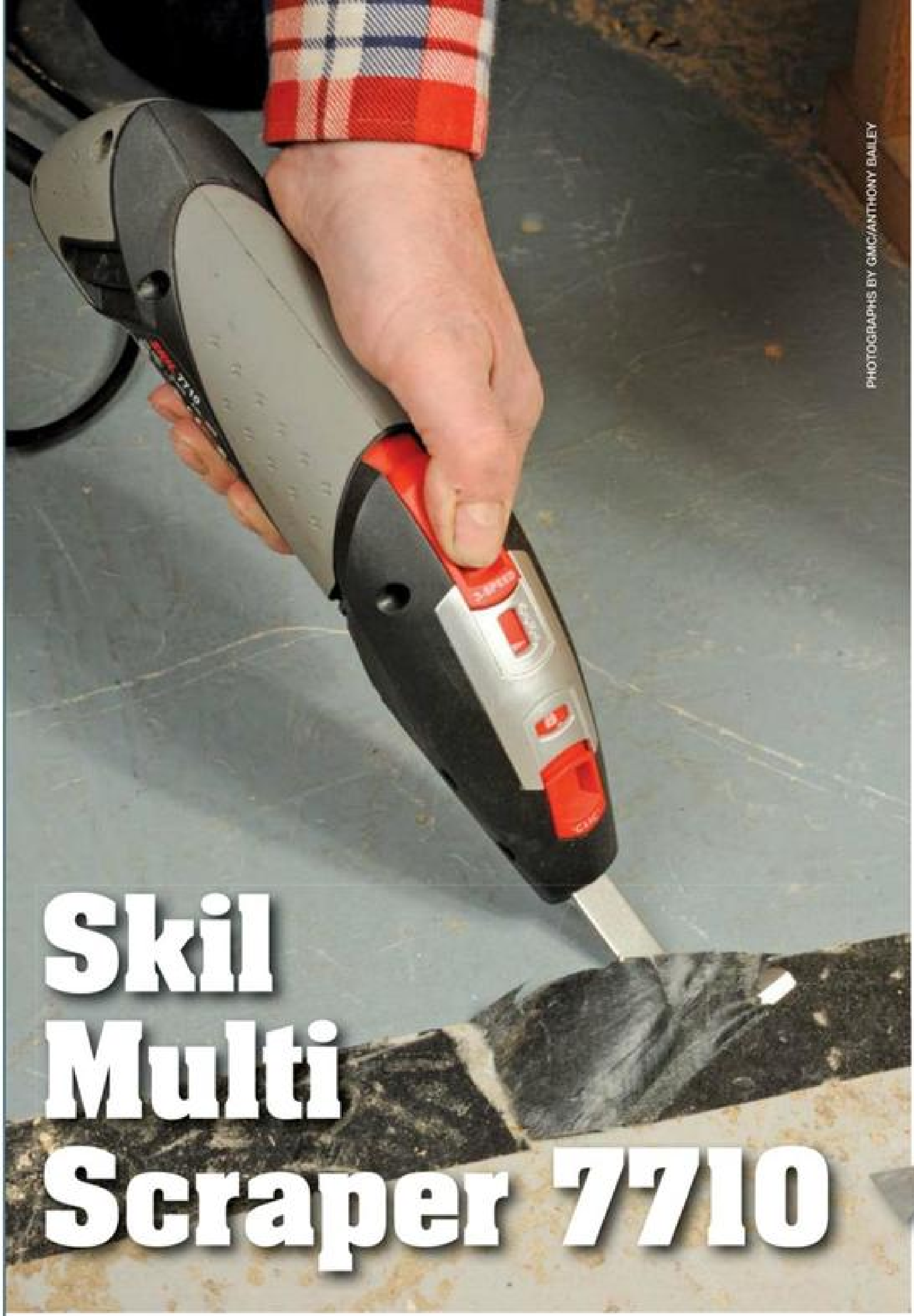
8 If you are serious about dovetail joints you need to pick chisels that have a sharp enough bevel edge to fit the undercut profile of a dovetail.

9 You can create flutes or beads with gouges but you may only want to 'cut a line' with a gouge so you can then chisel up to it, achieving a very crisp shape.

6

9

10 Lastly, always keep your tools clean and rust-free. I use very light camellia oil and wipe down the blade to the tip thus avoiding an accident. It is worth investing in a rust inhibitor compound that you can leave in the toolbox or tool drawer. ■



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5 STAR RATING

Versatility: ★★★★★
Performance: ★★★★★
Ease of use: ★★★★★

Always trying to stay at the cutting edge of woodworking we decided to try another of Skil's keenly thought out offerings, the Multi Scraper 7710

The Skil Multi Scraper 7710 is an effectively percussive power unit that sports a slimline body with soft-grip sections, which fits in the hand well and is also designed to accept scraper and chisel bits. These are inserted in the front end via a toolless CLIC mechanism that allows the fast changing of blades, which are locked in placed by a holding block fitting into the oval slot in the back section. Four blades are supplied: a 60mm standard blade, a 60mm spatula, a 15mm chisel and a 35mm universal blade, which allow the tool to be used for shaping, scraping and carving jobs. There are three speed options, which give you more control and afford you more sensitivity in use.

In use

We used it to remove some paint, old tiles and stuck-down flooring, as well as to cut a mortise using the chisel bit. The unit is very nice and easy to handle, and using it for all these modes was simple and effective. We could not fault this unit at all. Now, some time back, Flexcut produced an adaptor to fit into another unit similar to this, and guess what? The SK105 adaptor fits this one as well. It also accepts and holds the larger Flexcut carving blades, thus turning this excellent unit into a more useful and powerful carving tool, with even more flexibility for use by carvers in the workshop as well as for tasks around the home.

Verdict

Every Skil tool we have tested recently has performed well and the Multi Scraper 7710 is no exception. In my opinion, it is very handy and versatile in use. You can use it for a multitude of woodworking applications, and it can also be used around the home. The CLIC method of tool fitting is quick and reliable and allows the blades to be used either bevel up or down. It has the capacity to potentially be a very useful power carver rather just a DIY scraper tool. Definitely worth having in your woodworking arsenal. ■

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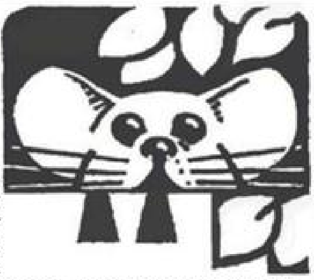

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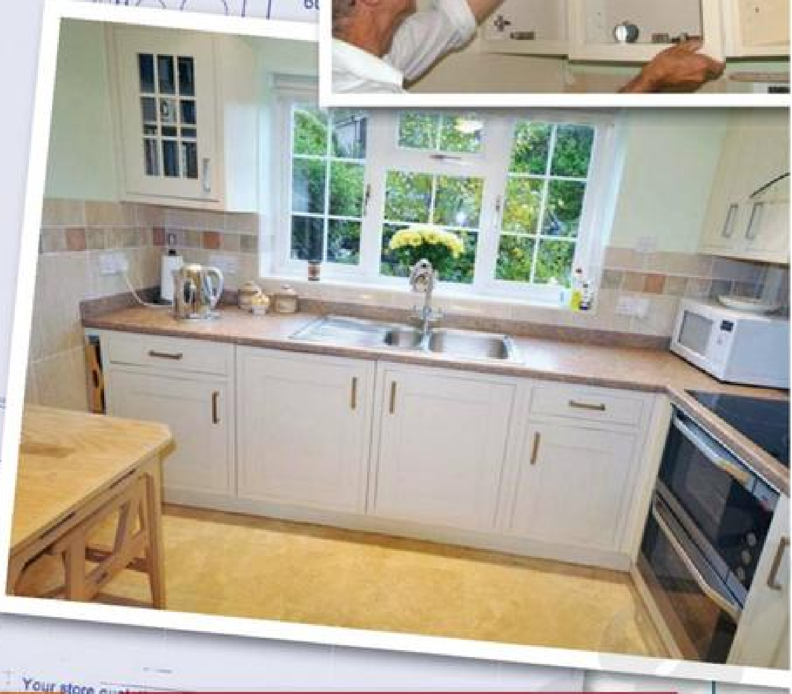

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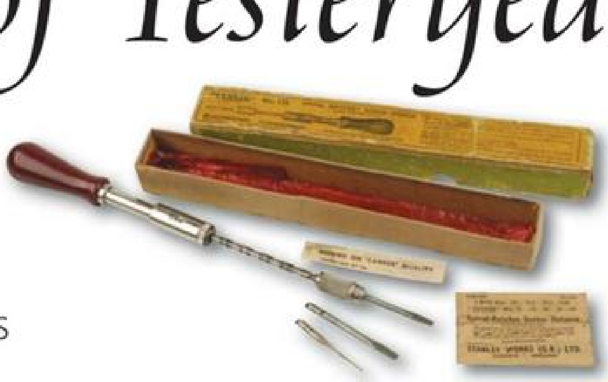

A collectable 1950s 135A complete with bits, box and inspection note and still very useable.
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A brand new Pozi No.2 bit – note the Stanley step and notch fitment at the end, this one fits the 130 series Yankee. Genuine Stanley shell bits drill quickly but don't bother using reverse action to withdraw it, simply pull out of the hole

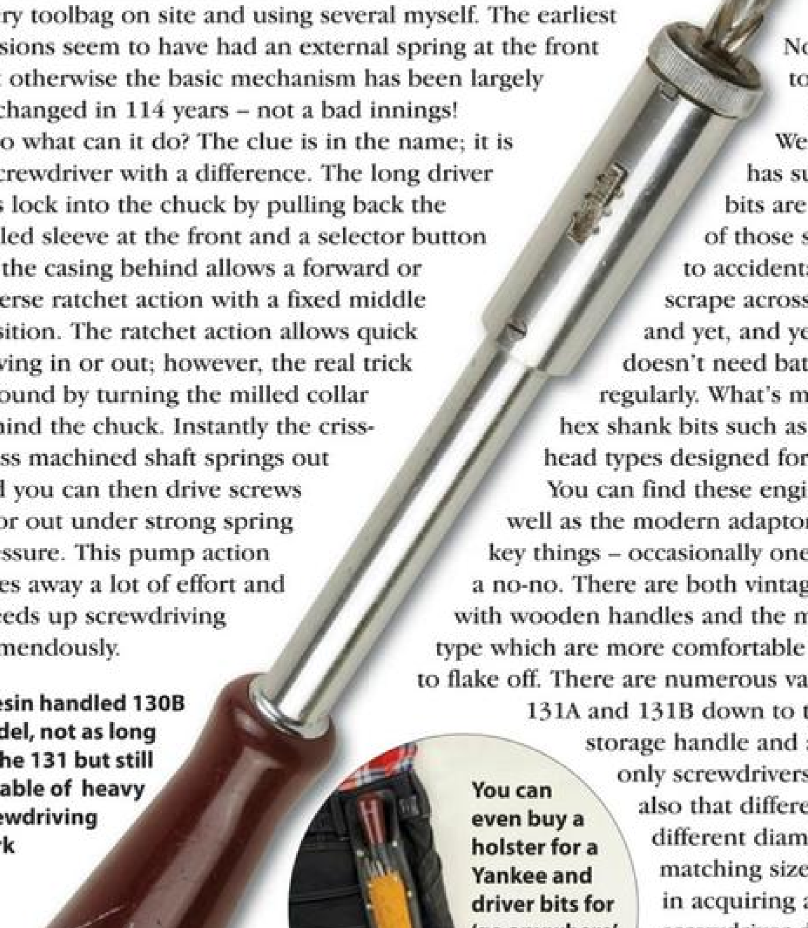
It may seem odd to include a hand tool which Stanley only retired in 2007 and of which there are still several other makes available today. However, this ubiquitous piece of kit first appeared in 1898 produced by North Brothers Mfg, Co. Philadelphia, the company was then only sold to Stanley Tools in 1946. With Stanley's worldwide appeal and marketing power it was inevitable that this tool would be synonymous with the Stanley 'Yankee' brand and appear in every tradesman's toolkit only to be supplanted late in the day by the now universal cordless drill.

I can remember back in the 1980s seeing one of these in every toolbag on site and using several myself. The earliest versions seem to have had an external spring at the front but otherwise the basic mechanism has been largely unchanged in 114 years – not a bad innings!

So what can it do? The clue is in the name; it is a screwdriver with a difference. The long driver bits lock into the chuck by pulling back the milled sleeve at the front and a selector button on the casing behind allows a forward or reverse ratchet action with a fixed middle position. The ratchet action allows quick driving in or out; however, the real trick is found by turning the milled collar behind the chuck. Instantly the criss-cross machined shaft springs out and you can then drive screws in or out under strong spring pressure. This pump action takes away a lot of effort and speeds up screwdriving tremendously.

Not only that, you can fit shell-type drill bits to drill pilot holes with equal facility.

So why aren't more people using them? Well they are old technology, the cordless drill has surpassed it developmentally. The old driver bits are slot head or Philips pattern and not many of those screws still get used. The Yankee's ability to accidentally puncture plasterboard or run a large scrape across a highly finished surface is also legendary, and yet, and yet… it is lighter than a cordless drill, it doesn't need batteries and its action is very fluid if it is oiled regularly. What's more, you can buy adaptors to take modern hex shank bits such as Pozi, Torx and all the other exotic modern head types designed for electric driving and it will still drill to boot! You can find these engineering marvels on eBay dare I say it, as well as the modern adaptors and bits. Beware, however, of certain key things – occasionally one will have its spring removed, a no-no. There are both vintage and modern types, ones with wooden handles and the more modern resin type which are more comfortable as no paint is there to flake off. There are numerous variants from the mighty 131A and 131B down to the Handyman with its bit storage handle and a series of smaller ratchet-only screwdrivers for lesser tasks. Beware also that different Yankee drivers take different diameter bits, so choose the matching sizes. If you are interested in acquiring and using a pump screwdriver do some research online so you only buy what you really need, and don't spend loads of money – unless you are a serious collector. ■



A resin handled 130B model, not as long as the 131 but still capable of heavy screwdriving work

You can even buy a holster for a Yankee and driver bits for 'go anywhere' screwdriving

Once you buy a bit adaptor of the right size you can fit any standard modern hex shank driver bit

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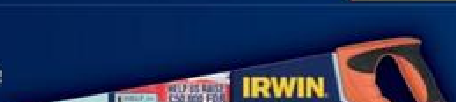

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